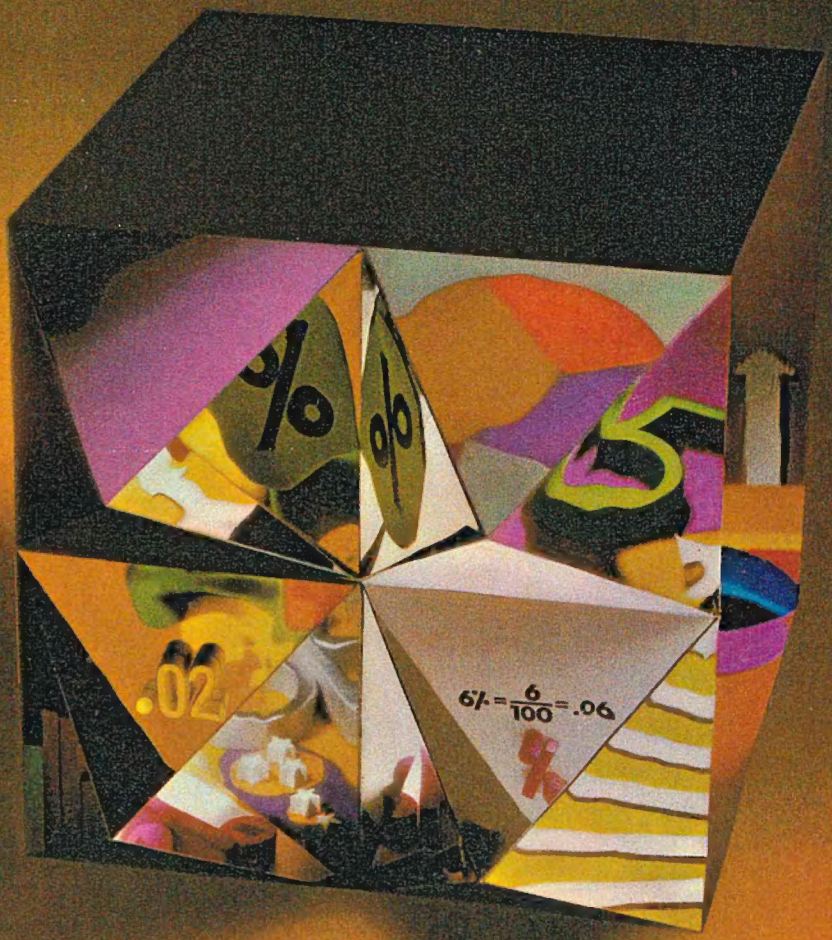

workbook

modern school mathematics
structure and use

revised edition

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Ernest R. Duncan
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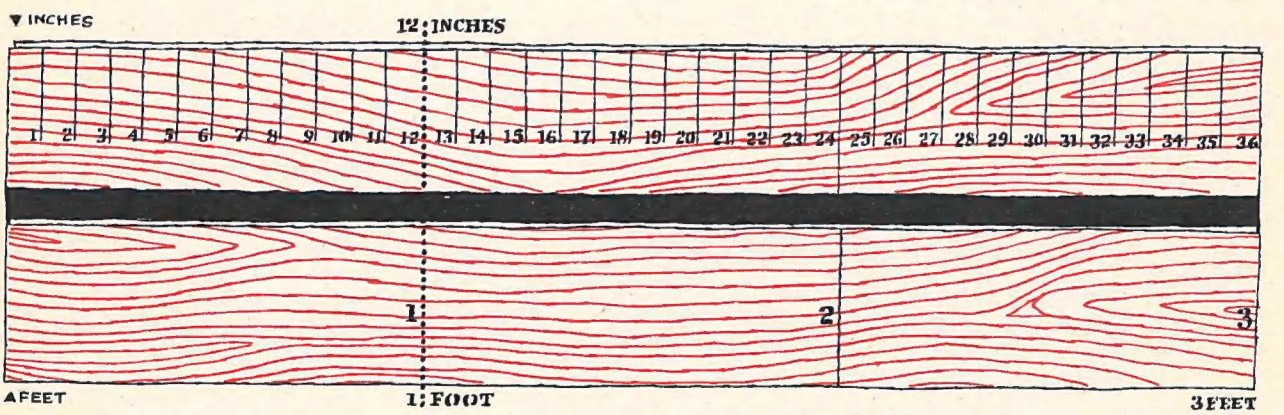

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Contents

**Pages refer to the Student Text.*

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chapter 1

Name _____

sets, numbers, numerals

Sets — Subsets

List the members of each set.

1. {vowels} _____
2. {odd numbers less than 10} _____
3. {teachers in your room} _____

Describe each set.

4. {January, February, March, April} _____
5. {a, b, c, d, . . . , y, z} _____

Tell whether each set is finite or infinite.

6. _____ all numbers
7. _____ even numbers
8. _____ hours in a year
9. _____ students in school
10. _____ odd numbers
11. _____ cars in your city

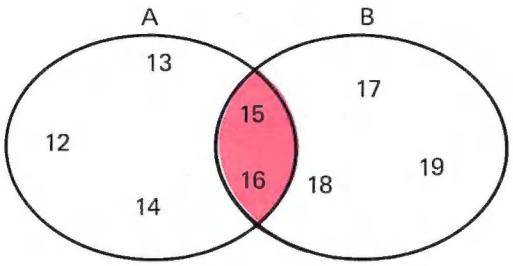
Write two subsets of each set.

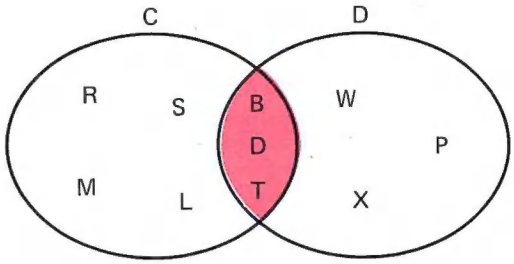
silverware **cars** **animals**

12. {_____}
13. {_____}
14. {_____}
15. {_____}
16. {_____}
17. {_____}

Intersection and Union of Sets

Use the diagram to help you name the set.





1. A = {_____}

2. B = {_____}

3. $A \cap B$ = {_____}

4. $A \cup B$ = {_____}

5. C = {_____}

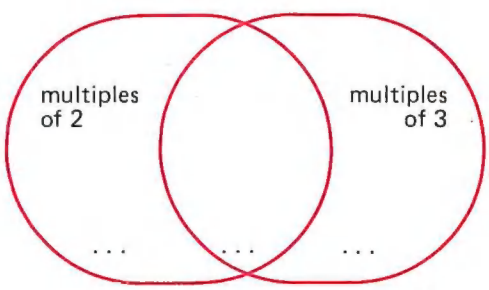
6. D = {_____}

7. $C \cap D$ = {_____}

8. $C \cup D$ = {_____}

Complete the diagram.

9. Multiples of 2 {0, 2, 4, 6, 8, 10, . . .}
Multiples of 3 {0, 3, 6, 9, 12, 15, . . .}



10. The intersection can be described as _____.

11. The . . . at the end tells that the set is _____.

Name the union of each pair of sets.

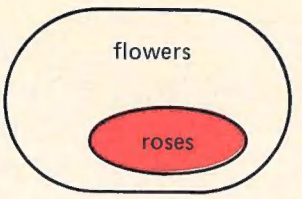
12. L = {even numbers between 3 and 10}
M = {whole numbers between 5 and 12}
$L \cup M$ = {_____}

13. N = {whole numbers between 8 and 12}
O = {odd numbers less than 10}
$N \cup O$ = {_____}

Name _____

All — If–then

Write an *All* and an *If-then* statement about each diagram.

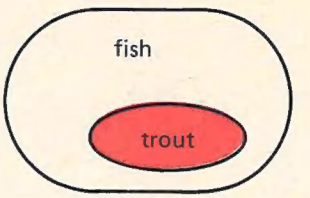


1. If _____

_____

2. All _____

_____

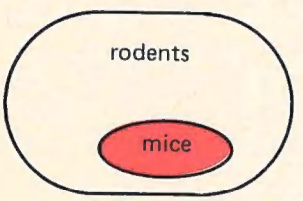


5. If _____

_____

6. All _____

_____

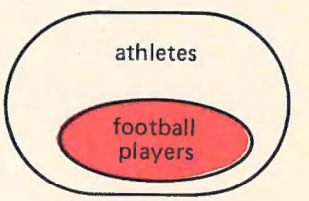


3. If _____

_____

4. All _____

_____



7. If _____

_____

8. All _____

_____

Draw a diagram to illustrate the first sentence, then complete the second sentence.

9.

All rain is liquid.

10. _____ is a subset of _____.

11.

If something is an orange, then it is fruit.

12. _____ is a subset of _____.

Universal Set

Name a universal set for each.

	Universal Set
1. U = {canoe, sailboat, yacht}	{_____}
2. N = {football, basketball, baseball}	{_____}
3. I = {pencil, pen, chalk}	{_____}
4. V = {Kansas, Wisconsin, California}	{_____}
5. E = {cow, horse, sheep}	{_____}
6. R = {0, 2, 4, 6, 8, 10, . . .}	{_____}
7. S = {celery, pear, carrot}	{_____}
8. A = {roses, petunias, pansies}	{_____}
9. L = {Amazon, Mississippi, Nile}	{_____}

Name a subset from U that will make the sentence true.

10. U = {whole numbers} _____ numbers are divisible by 2.

11. U = {things that fly} _____ travel fast.

12. U = {subjects in school} _____ is studied by students in the elementary school.

13. U = {polygons} _____ have four right angles.

14. U = {closed curves} _____ are formed with line segments.

15. U = {quadrilaterals} _____ are quadrilaterals.

Name _____

Sentences

Write >, =, or < in the ◯ to make a true sentence.

1. $5 + 8$ ◯ 16
2. $62 - 5$ ◯ 58
3. $4 + 13$ ◯ $13 + 4$
4. 5×28 ◯ 28×5
5. 4×13 ◯ 42
6. 17×3 ◯ 18×2
7. $48 \div 12$ ◯ $36 \div 9$
8. 10×83 ◯ 803

Replace the underlined word to make a true sentence. Then name your universal set.

Universal Set

9. It is eaten. _____ {_____}
10. It is an odd number. _____ {_____}
11. She is a famous person. _____ {_____}
12. He is a famous athlete. _____ {_____}
13. It is a dog. _____ {_____}

Replace the letter with numerals from the set on the right to solve the inequality.

14. $n < 6$ _____ {3, 4, 5, 6, 7, 8, 9}
15. $n > 4$ _____ {0, 1, 2, 3, 4, 5, 6}
16. $(3 \times n) < 9$ _____ {2, 4, 6, 8, 10, 12}
17. $(12 \div n) > 2$ _____ {2, 4, 6, 8, 10, 12}
18. $(18 - n) > 12$ _____ {0, 1, 2, 3, 4, 5, 6}
19. $(14 + n) < 20$ _____ {0, 1, 2, 3, 4, 5, 6}
20. $(3 \times n) < 30$ _____ {1, 3, 5, 7, 9, 11}

Numeration — Exponents

Write the expanded numeral.

1. 2987 = _____ + _____ + _____ + _____

2. 5865 = _____ + _____ + _____ + _____

Write the exponent.

3. $10^{\square} = 100$

4. $8^{\square} = 512$

5. $10^{\square} = 1{,}000{,}000$

6. $10^{\square} = 1000$

7. $3^{\square} = 81$

8. $4^{\square} = 256$

9. $10^{\square}$ = 1 million

10. $10^{\square}$ = 1 thousand

***11.** $10^{\square}$ = 1 billion

Complete the equation.

12. $10^2 + 10^1 + 1$ = _____

13. $(3 \times 10^2) + 3$ = _____

14. $(8 \times 10^2) + (8 \times 10^1) + 8$ = _____

15. $(6 \times 10^2) + (3 \times 10^1) + 6$ = _____

Use exponents to write

16. 576 billion (576×10^9)

17. 372 thousand _____

18. 32 thousand _____

19. 7 million _____

20. 324 million _____

21. 43 billion _____

22. 21 million _____

23. 8 billion _____

Name _____ **Ordering — Rounding**

Round each number to the nearest hundred and nearest thousand.

1. 7852

---, ---

2. 9276

---, ---

3. 6375

---, ---

4. 6497

---, ---

5. 2728

---, ---

6. 9823

---, ---

Try This!

To round a number to the nearest 100:
Consider 835. Think: the numeral to the right of the hundreds' place is less than 5 so we round down. 800.
Consider 875. Think: the numeral to the right of the hundreds' place is greater than 5, so we round up. 900.

Round to the nearest 100, then add the rounded numbers.

7. 896 + 324

--- + --- = ---

8. 624 + 341

--- + --- = ---

9. 136 + 687

--- + --- = ---

10. 736 + 495

--- + --- = ---

11. 565 + 487

--- + --- = ---

12. 574 + 696

--- + --- = ---

*Round to the nearest million.

13. 32,783,496

---

14. 521,347,293

---

15. 2,738,692

---

16. 597,236,424

Units of Measure

Name the quantity.

1. 36 inches: _____ feet or _____ yard

2. 8 pints: _____ quarts or _____ gallon

3. 16 ounces: _____ pound

4. 100 centigrams: _____ gram

5. 1000 grams: _____ kilogram

6. 100 centimeters: _____ meter

Name the quantity.

7. 3 meters: _____ centimeters

8. 5 pounds: _____ ounces

9. 5 grams: _____ centigrams

10. 7 grams: _____ centigrams

11. 10,000 grams: _____ kilograms

12. 6 gallons: _____ quarts

Write an equation to change the measure.

13. 9 feet 3 inches to inches. $(9 \times 12) + 3 =$ _____

14. 48 inches to feet. $(48 \div 12) =$ _____

15. 72 inches to yards. _____

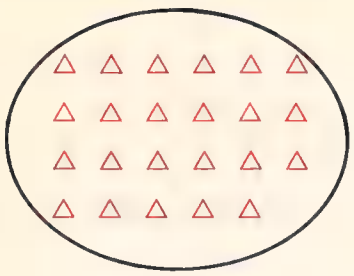
16. 6 pounds and 4 ounces to ounces. _____

17. 900 centimeters to meters. _____

Name _____

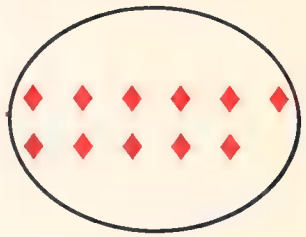
Bases — Roman Numerals

Ring the sets of eight, then write a base eight numeral for the number of objects in each set.



1. _____eight

2. _____eight



3. _____eight

Write a base eight numeral for each base ten numeral.

4. 13_{ten} = _____eight

5. 16_{ten} = _____eight

6. 64_{ten} = _____eight

Write the decimal numeral.

7. I = _____

9. V = _____

11. X = _____

13. L = _____

8. C = _____

10. D = _____

12. M = _____

14. CM = _____

Answer with Roman numerals.

15. How many days in a week? _____

16. How many inches in 1 yard? _____

17. Rename 7 × 7 _____

18. How many ounces in 1 pound? _____

19. How many pints in 1 gallon? _____

20. What numeral follows 98? _____

Use Roman numerals to name the cardinal number of each set.

21. {days in a year} _____

22. {hours in a day} _____

23. {weeks in a year} _____

24. {minutes in 1 hour} _____

25. {years in a decade} _____

26. {points for 1 touchdown} _____

chapter 2

addition, subtraction, multiplication, division

Basic Properties of Addition

Use the commutative property to rewrite the sum.

1. $6 + 3 + 4 =$

$6 +$ _____ $+ 3 =$ _____

2. $9 + 8 + 1 =$

$9 +$ _____ $+ 8 =$ _____

3. $3 + 9 + 7 =$

$3 +$ _____ $+ 9 =$ _____

4. Can you explain why the rewritten sum might be easier?

_____

Use the associative property to rewrite each sum.

5. $6 + (3 + 8) =$

$(6 + 3) + 8 =$ _____

6. $5 + (4 + 9) =$

_____ $=$ _____

7. $4 + (5 + 7) =$

_____ $=$ _____

8. Can you explain why the rewritten sum might be easier?

_____

Name the sum.

9.
$$\begin{array}{r} 9 \\ 3 \\ +\,2 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 4 \\ 5 \\ +\,6 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 7 \\ 4 \\ +\,3 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 8 \\ 3 \\ +\,8 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 7 \\ 7 \\ +\,3 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 6 \\ 9 \\ +\,4 \\ \hline \end{array}$$

Try This!

15. $6 + 7 + 8 =$ _____ or $3 \times 7 =$ _____ (14)

16. $7 + 9 + 11 =$ _____ or _____ $=$ _____ (18)

17. $3 + 4 + 5 + 6 + 7 + 8 + 9 =$ _____ or _____ $=$ _____

Name _____

Practicing Addition

Expanded form	4-step form	Short form
$600 + 30 + 8$ $+200 + 20 + 6$ $800 + 50 + 14 = 864$	638 +226 14 50 800 864	1 638 +226 864

Name the sum.

1. 63 + 84

2. 243 + 324

3. 72 + 56

4. 635 + 248

5. 43 + 24

6. 796 + 343

7. 96 + 48

8. 794 + 389

9. 9434 + 1243

10. 6381 + 2483

11. 7349 + 2769

12. 7438 + 2698

13. 687
248
54
+311

14. 463
324
48
+750

15. 496
387
246
+ 54

16. 298
489
764
+464

17. Sue read 136 pages one day, 274 pages the next day.

How many pages did she read in the two days? _____

Basic Ideas in Subtraction

Use the commutative property of addition to write the other addition fact. Then write the subtraction equation that "undoes" the addition equation.

1. $6 + 9 = 15$ $\quad$ $9 + 6 = 15$

_____ $\quad$ _____

2. $5 + 6 = 11$ $\quad$ _____

_____ $\quad$ _____

3. $7 + 9 = 16$ $\quad$ _____

_____ $\quad$ _____

4. $8 + 7 = 15$ $\quad$ _____

_____ $\quad$ _____

Write $<$, $>$ or $=$ in the ◯ to make the sentence true.

5. $16 - 8$ ◯ $17 - 9$

6. $18 - 9$ ◯ $16 - 8$

7. $17 - 9$ ◯ $12 - 3$

8. $14 - 5$ ◯ $12 - 6$

9. $14 - 7$ ◯ $16 - 5$

10. $14 - 5$ ◯ $13 - 6$

11. $13 - 8$ ◯ $15 - 9$

12. $13 - 9$ ◯ $14 - 9$

13. $11 - 3$ ◯ $16 - 7$

Complete the sentence.

14. Joining sets suggests _____.

15. Separating sets suggests _____.

16. Addition and subtraction are _____ operations.

Name the missing addend.

17. $63 - 29 =$ ____

18. $784 - 386 =$ ____

19. $774 - 369 =$ ____

20. $587 - 496 =$ ____

21. $5434 - 2798 =$ ____

Name _____

Properties in Multiplication

1. The associative property of multiplication says that the way the numbers are grouped does not change the _____.

2. The distributive property says that multiplying the sum of two addends gives the same result as multiplying each addend by the number and _____ the products.

Use ( ) to show how you would group the addends or factors. Then complete the equations.

3. $2 + (2 + 4) = 2 + 6 =$ _____

4. $1 + 4 + 5 =$ _____ + _____ = _____

5. $7 + 9 + 6 =$ _____ + _____ = _____

6. $3 \times 4 \times 2 =$ _____ × _____ = _____

7. $9 \times 2 \times 5 =$ _____ × _____ = _____

8. $2 \times 7 \times 10 =$ _____ × _____ = _____

The following exercises show how the distributive property is used. Complete the equations.

9. $(7 \times 4) + (2 \times 4) = (7 + 2) \times 4 =$ _____ × 4 = _____

10. $(6 \times 3) + (6 \times 5) =$ (_____ + _____) × 6 = _____ × _____ = _____

11. $(2 \times 5) + (2 \times 9) = (5 + 9) \times$ _____ = _____ × _____ = _____

12. $320 \times 3 = (300 + 20) \times 3 = (300 \times 3) +$ (_____ × 3) = _____ + _____

= _____

13. $430 \times 5 =$ (_____ + 30) × 5 = (_____ × 5) + (30 × 5) = _____ + _____

= _____

14. $160 \times 7 = (100 +$ _____) × 7 = (100 × _____) + (60 × _____)

= _____ + _____ = _____

Practice with Multiplication

Name the products using the 3-step method shown in the first exercise.

1.
$$\begin{array}{r} 42 \\ \times\ 27 \\ \hline 294 \\ 840 \\ \hline 1134 \end{array}$$

2.
$$\begin{array}{r} 63 \\ \times\ 57 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 94 \\ \times\ 38 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 56 \\ \times\ 85 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 49 \\ \times\ 54 \\ \hline \end{array}$$

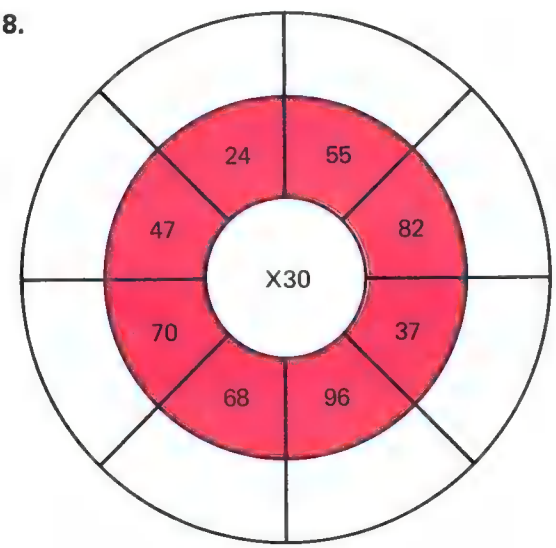
Complete these exercises.

6. $\begin{array}{r} 56 \\ \times\ 24 \\ \hline \end{array}$ = | $\begin{array}{r} 56 \\ \times\ 20 \\ \hline \text{---------} \end{array}$ | + | $\begin{array}{r} 56 \\ \times\ 4 \\ \hline \text{---------} \end{array}$ | = ---------

7. $\begin{array}{r} 63 \\ \times\ 48 \\ \hline \end{array}$ = | $\begin{array}{r} 63 \\ \times\ 40 \\ \hline \text{---------} \end{array}$ | + | $\begin{array}{r} 63 \\ \times\ 8 \\ \hline \text{---------} \end{array}$ | = ---------

Complete each pattern by naming the product of the factors.

8.



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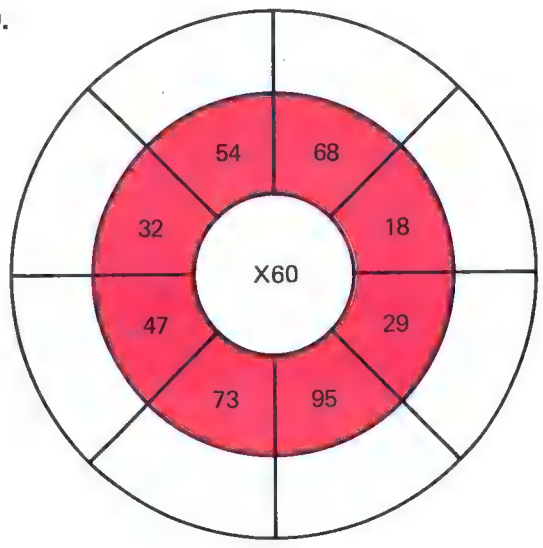


Solve the equation.

10. $(20 \times 32) + (6 \times 32) =$ --------- $\times 32$

--------- + --------- = ---------

11. $(30 \times 14) + (4 \times 14) =$ --------- $\times 14$

--------- + --------- = ---------

Name _____

Functions — Rates

Write a function rule for each set of numbered pairs.

{(3, 24), (6, 48), (2, 16)} {(5, 45), (3, 27), (7, 63)} {(4, 28), (3, 21), (6, 42)}

1. _____ **2.** _____ **3.** _____

Write a function rule for each rate.

4. 8 cents per letter

$8 \times l = n$

5. 12 inches per foot

_____

6. 3 feet per yard

_____

7. 6 people per car

_____

8. 4 quarts per gallon

_____

9. 60 minutes per hour

_____

10. 42¢ per item

_____

11. 2 pints per quart

_____

Complete the table.

12. Rate: 6¢ per gallon $6 \times g = c$

Gallons	1	8	4	9	7	3				20	30
Cents	6						12	60	30		

13. Rate: 4 quarts per gallon $4 \times g = q$

Gallons	1	6	3	9	7	5	8			
Quarts	4							16	8	100

Try This!

14. 5 hours 250 miles Rate: _____ miles per hour.

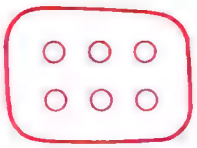
15. 7 items $28.00 Rate: _____ dollars per item.

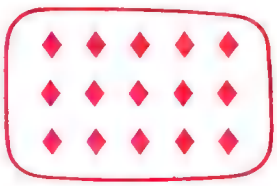
16. 3 days 2100 miles Rate: _____ miles per day.

Basic Properties of Division

3 sets of 4 make a set of 12.	$3 \times 4 = 12$
4 sets of 3 make a set of 12.	$4 \times 3 = 12$
12 separated into 3 subsets with 4 per subset	$12 \div 3 = 4$
12 separated into 4 subsets with 3 per subset	$12 \div 4 = 3$

For each set write four equations.





1. _____ **5.** _____ **9.** _____

2. _____ **6.** _____ **10.** _____

3. _____ **7.** _____ **11.** _____

4. _____ **8.** _____ **12.** _____

Name the missing factor.

13. $63 \div 9 =$ _____ **15.** $72 \div 8 =$ _____ **17.** $6 \times$ _____ $= 54$

14. $49 \div$ _____ $= 7$ **16.** $36 \div$ _____ $= 9$ **18.** $4 \times$ _____ $= 32$

Rewrite each equation.

19. $(32 \div 4) + (16 \div 4) =$ _____ $\div 4$

_____ + _____ = _____

20. $(18 \div 6) + (18 \div 6) =$ _____ $\div 6$

_____ + _____ = _____

21. $(14 \div 7) + (35 \div 7) =$ _____ $\div 7$

_____ + _____ = _____

22. $(60 \div 3) + (9 \div 3) =$ _____ $\div 3$

_____ + _____ = _____

Name _____

Practice with Division

Complete the sentence, then write the working form.

1. In 38 there are _____ sets of 9 and _____ remaining.

2. In 45 there are _____ sets of 7 and _____ remaining.

3. In 71 there are _____ sets of 8 and _____ remaining.

$$\begin{array}{r} 4 \\ 9\overline{)38} \\ 36 \\ \hline 2 \end{array}$$

Name the quotient and remainder.

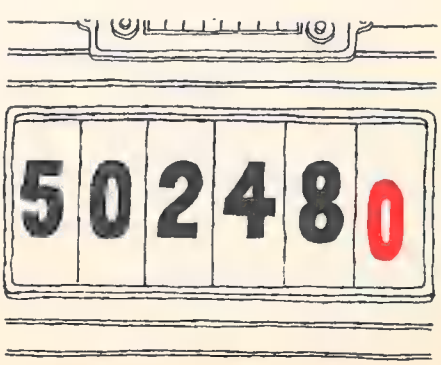
4. $7\overline{)347}$ **6.** $9\overline{)327}$ **8.** $8\overline{)659}$ **10.** $6\overline{)349}$

5. $5\overline{)436}$ **7.** $9\overline{)876}$ **9.** $6\overline{)369}$ **11.** $7\overline{)497}$

Name the quotient.

12. $4\overline{)932}$ **14.** $6\overline{)852}$ **16.** $7\overline{)854}$ **18.** $6\overline{)846}$

13. $3\overline{)732}$ **15.** $5\overline{)795}$ **17.** $8\overline{)968}$ **19.** $4\overline{)732}$



Solve the problem.

20. In 5 days Mr. Williams drove 660 miles.
About how many miles was that per day? _____

21. In 4 years Mr. Stone drove 50,248 miles.
About how many miles was that per year? _____

Functions — Sequences

Use the function rule to complete the set of ordered pairs.

1. $(3 \times m) + 4$ {(5, _____), (6, _____), (8, _____), (2, _____), (7, _____), (9, _____)}

2. $(7 \times m) - 4$ {(2, _____), (4, _____), (9, _____), (8, _____), (7, _____), (6, _____), (3, _____)}

3. $(8 \times m) + 5$ {(9, _____), (4, _____), (7, _____), (6, _____), (8, _____), (5, _____)}

Match the expression with the function rule it describes.

4. $f = i \div 12$ _____ **a.** Changes quarts to gallons

5. $q = 4 \times g$ _____ **b.** Changes gallons to quarts

6. $d = h \div 24$ _____ **c.** Changes feet to inches

7. $i = 12 \times f$ _____ **d.** Changes inches to feet

8. $h = 24 \times d$ _____ **e.** Changes hours to days

9. $g = q \div 4$ _____ **f.** Changes days to hours

Continue the sequence to the 12th term.

10. {1, 6, 11, 16, _____, _____, _____, _____, _____, _____, _____, _____}

11. {2, 5, 8, 11, _____, _____, _____, _____, _____, _____, _____, _____}

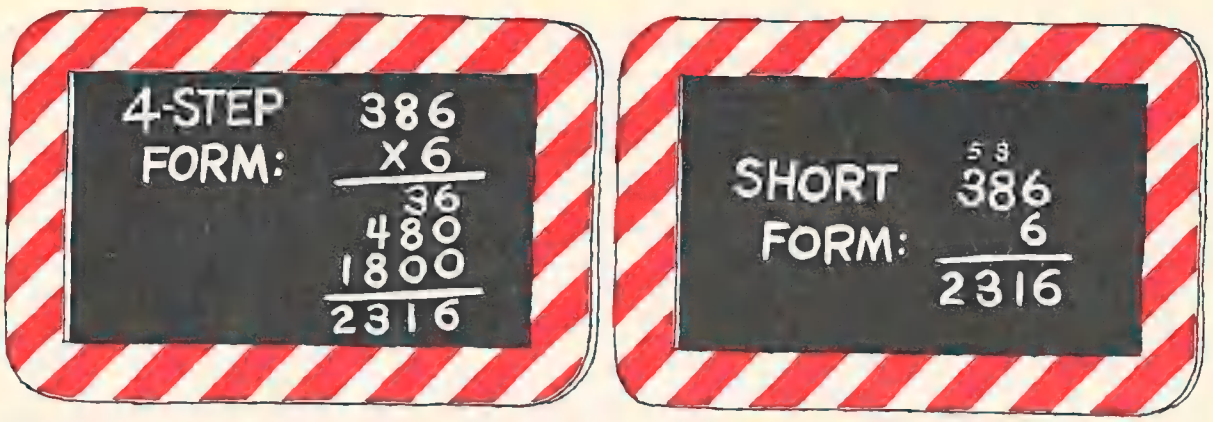
12. {3, 6, 12, 24, _____, _____, _____, _____, _____, _____, _____, _____}

chapter 3

Name _____

multiplication and division

Multiplication



Use either method to name the product.

1. 369 × 3

2. 847 × 4

3. 256 × 7

4. 945 × 6

5. 438 × 8

6. 789 × 6

7. 4732 × 7

8. 9436 × 4

9. 8756 × 8

10. 684 × 36

11. 497 × 27

12. 748 × 63

Try This!

13. 3 × 37 = _____

14. 6 × 37 = _____

15. 9 × 37 = _____

16. 12 × 37 = _____

17. 15 × 37 = _____

18. 18 × 37 = _____

Rates

Name the totals.

1. Rate 30¢ per hour 8 hours Total _____

2. Rate 50 miles per hour 6 hours Total _____

3. Rate 20 times per day 7 days Total _____

4. Rate 6 times per week 8 weeks Total _____

5. When we know the rate we _____ the rate by the number of days, weeks, hours and so on to find the total.

Name the rate.

6. 90 miles in 3 hours Rate _____ miles per hour.

7. 35 times in 7 days Rate _____ times per day.

8. $8.00 in 4 hours Rate _____ dollars per hour.

9. 24 people in 6 cars Rate _____ people per car.

10. When we know the total and the number of hours, days, and so on, we _____ to find the rate.

Try This! Distance is found by multiplying rate × time.

11. How would you find rate? _____

12. How would you find time? _____

Name _____

Rounding — Estimating

Circle the numeral in the hundreds' place.

1. 4789 **2.** 6397 **3.** 4298 **4.** 6854 **5.** 7432

Circle the numeral in the tens' place.

6. 7384 **7.** 6975 **8.** 4327 **9.** 2969 **10.** 7884

Round to the nearest ten and hundred.

6742	4387	845	756	8763
11. _____	**13.** _____	**15.** _____	**17.** _____	**19.** _____
12. _____	**14.** _____	**16.** _____	**18.** _____	**20.** _____

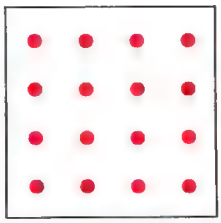
Use rounding to estimate the product.

36×48	94×73	689×41	974×84	728×69
21. _____	**22.** _____	**23.** _____	**24.** _____	**25.** _____

Try This! Estimate the sum by rounding each number to hundreds.

26.	**27.**	**28.**	**29.**
784	732	987	975
369	463	432	420
225	594	697	318
436	708	424	720
875	624	536	480
936	736	475	560
Est. _____	_____	_____	_____

Squaring Numbers



16 dots can be arranged in a square. Each row and column has 4. We say we have a 4 × 4 square.

Ring the numerals that name a number of dots that could be arranged in a square.

1. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50.

For the numerals you marked in Exercise 1 name the number of dots in each column and row.

2. (1 × 1)

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

Try This !

75	25	55	45	65
× 75	× 25	× 55	× 45	× 65
5625	625	3025	2025	4225

Can you see the pattern for the tens and ones ?_____

Can you see the pattern for the hundreds and thousands ?_____

Name _____

Division

Study the example.

$$
\begin{array}{r}
2489 \\
3\overline{)\,7467} \\
-6 \\
\hline
14 \\
-12 \\
\hline
26 \\
-24 \\
\hline
27 \\
-27 \\
\hline
0
\end{array}
$$

$7000 - (2000 \times 3) = 1000$

$1400 - (400 \times 3) = 200$

$260 - (80 \times 3) = 20$

$27 - (9 \times 3) = 0$

$$
\begin{array}{r}
2\,4\,8\,9 \\
3\overline{)\,7\,4\,6\,7} \\
1\,2\,2
\end{array}
$$

Name the quotient and remainder.

1. $8\overline{)9728}$

2. $6\overline{)4933}$

3. $3\overline{)8655}$

4. $7\overline{)9328}$

5. $6\overline{)7392}$

6. $5\overline{)6372}$

7. $4\overline{)6384}$

8. $7\overline{)8942}$

Try This!

9. $6\overline{)\,7000 + 1400 + 230 + 54}$

$-6000 - 1200 - 180 - 54$

1000 200 50

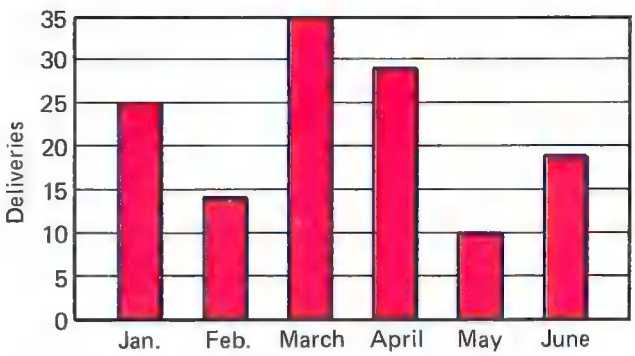
10. $4\overline{)\,9000 + 400 + 60 + 8}$

$- \_\_\_\_\_ - \_\_\_\_ - \_\_\_ - \_\_$

Data

Study the bar graph, and answer the questions.

The graph shows the number of grocery deliveries Tom made during the first 6 months of the year.



1. What was the greatest number of deliveries he made? _____

   The least? _____

2. What was the average number of deliveries he made during the 6 months? _____

The scores on a mathematics test were 100, 100, 100, 100, 95, 81, 78, 78, 78, 78, 78, 66, 52, and 50. Use these data to answer the questions.

3. What is the average? _____

4. What is the mode? _____

5. What is the median? _____

Highest and Lowest State Altitudes (in feet)

State	Highest point	Elevation	Lowest point	Elevation
Alaska	Mount McKinley	20,320	Pacific Ocean	0 (sea level)
Alabama	Cheaha Mountain	2407	Gulf of Mexico	0
Colorado	Mount Elbert	14,431	Arkansas River	3350
Illinois	Charles Mound	1241	Mississippi River	279
Ohio	Campbell Hill	1550	Ohio River	433
Vermont	Mount Mansfield	4393	Lake Champlain	95
West Virginia	Spruce Knob	4860	Potomac River	581

For the seven states listed above, complete the table.

		Average	Median	Mode
6–8.	Highest elevation			
9–11.	Lowest elevation			

Name _____

Estimating Quotients

To estimate the quotient, think:

$23\overline{)898}$

Step 1: 23 is about 2 tens
Step 2: 898 is about 90 tens
Step 3: 90 ÷ 2 is about 40

Estimate the quotient. The numerals underlined in red are to help you.

1. $43\overline{)986}$ **2.** $21\overline{)936}$ **3.** $32\overline{)836}$ **4.** $21\overline{)824}$ **5.** $42\overline{)987}$

6. $23\overline{)1034}$ **7.** $39\overline{)1734}$ **8.** $62\overline{)2494}$ **9.** $86\overline{)4937}$ **10.** $73\overline{)2938}$

Another way to estimate:

$36\overline{)2938}$

Think: 2900 ÷ 3 is about 900
2900 ÷ 30 is about 90

Estimate using the method above. The circles are to help you.

11. $44\overline{)2632}$ **13.** $64\overline{)3798}$ **15.** $42\overline{)3098}$ **17.** $53\overline{)4736}$

12. $83\overline{)2698}$ **14.** $47\overline{)3487}$ **16.** $23\overline{)1342}$ **18.** $36\overline{)2342}$

Name the quotient in Exercises 11–15 and compare it with your estimate.

19. _____ **20.** _____ **21.** _____ **22.** _____ **23.** _____

Division with 2-digit Divisors

Name the quotient and remainder.

1. $27\overline{)947}$

$$\begin{array}{r} 27\overline{)947} \\ 810 \\ \hline 137 \\ 135 \\ \hline \end{array}$$

2. $92\overline{)9875}$

3. $36\overline{)7351}$

4. $28\overline{)8673}$

Name the quotient and remainder.

5. $36\overline{)293}$

7. $43\overline{)4672}$

9. $56\overline{)3742}$

11. $97\overline{)5372}$

6. $72\overline{)307}$

8. $28\overline{)7384}$

10. $43\overline{)1063}$

12. $81\overline{)3705}$

Name the quotients.

13. $46.92 \div 51 =$ _____

14. $92.61 \div 27 =$ _____

15. $24.91 \div 47 =$ _____

16. $98.07 \div 467 =$ _____

17. $91\overline{)798489}$

18. $68\overline{)943792}$

19. $35\overline{)967489}$

Name _____

Square Root

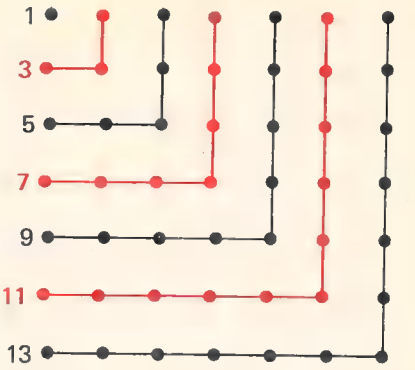
Study the pattern. Complete the equations.

$1^2 = 1 \quad = 1$

$2^2 = 4 \quad = 1 + 3$

$3^2 = 9 \quad = 1 + 3 + 5$

$4^2 = 16 = 1 + 3 + 5 + 7$



1. $5^2 = 25 = 1 + 3 +$ _____ + _____ + _____

2. $6^2 =$ _____ = _____ + _____ + _____ + _____ + _____ + _____

3. $7^2 =$ _____ = _____ + _____ + _____ + _____ + _____ + _____ + _____

4. Can you make a rule to tell how *odd* numbers can be used to find the square of a number? Hint: How many odd numbers are added to square

2? 3? 5? _____

Use the averaging method to name the square root.

See page 88 in your text if you have forgotten.

5. $\sqrt{289}$ _____ **6.** $\sqrt{324}$ _____ **7.** $\sqrt{841}$ _____ **8.** $\sqrt{169}$ _____

Try This!

To find the square root of 25:

$25 - 1 = 24$
$24 - 3 = 21$
$21 - 5 = 16$
$16 - 7 = 9$
$9 - 9 = 0$

9. How many successive odd numbers were subtracted? _____

10. What is the $\sqrt{25}$? _____ **11.** Find the $\sqrt{16}$ using this method.

12. Why do you think this method would be difficult if you were finding $\sqrt{2025}$?

_____

chapter 4
geometry

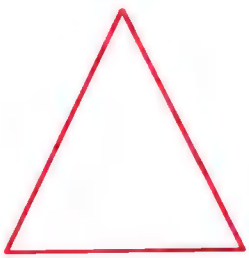
Geometry Review

Name the figure.

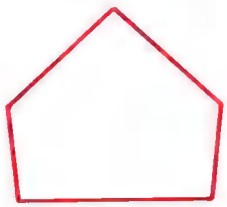
1. _____

4. _____

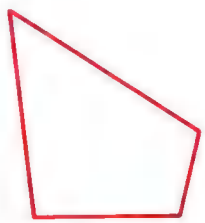
7. _____



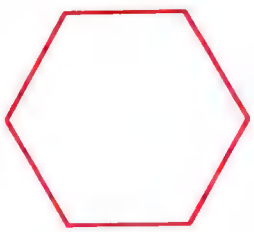
2. _____



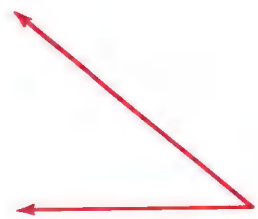
5. _____



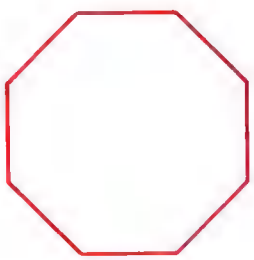
8. _____



3. _____



6. _____



9. _____

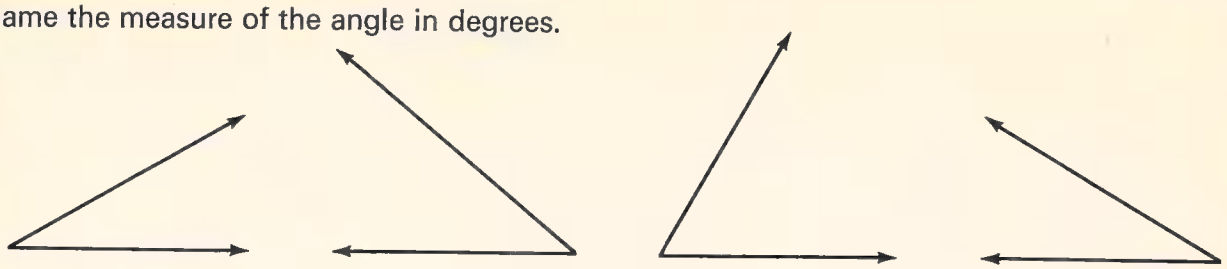
Name the unit of measure you would use to measure

10. a pencil.	**11.** weight of a person.	**12.** distance between two cities.	**13.** material for a dress.
United States system _____	_____	_____	_____
Metric system _____	_____	_____	_____

Name _____

Angles — Parallelograms

Name the measure of the angle in degrees.



1. _____ 2. _____ 3. _____ 4. _____

5. Which pair of angles are congruent? _____

6. Name two perpendicular lines. _____ and _____

7. Name two parallel lines. _____ and _____

Name the polygon.

8. Any polygon formed with 2 pairs of parallel lines _____

9. A polygon with two pairs of parallel lines all the same length _____

10. A polygon with two pairs of parallel lines, four 90° angles, and opposite sides the same length _____

11. A three-sided polygon with a right angle _____ _____

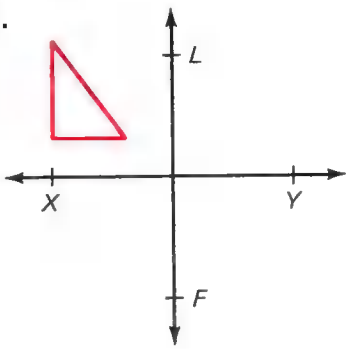
12. A three-sided polygon with 3 congruent sides _____ _____

*13. In Exercise 12, if all sides are congruent the angles must be _____.

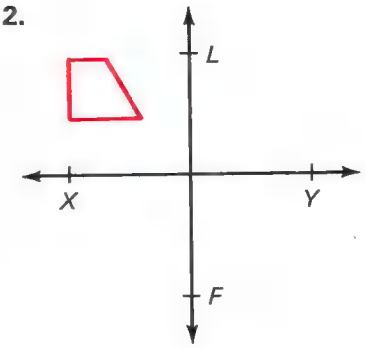
Slides and Flips

Draw the shape as it will look if you *slide* it in the direction of $\overleftrightarrow{XY}$.

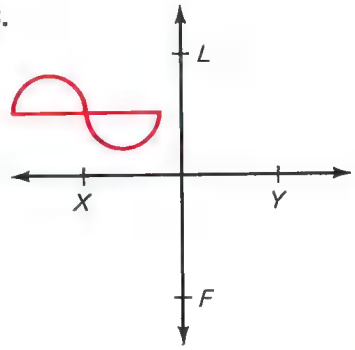
1.



2.

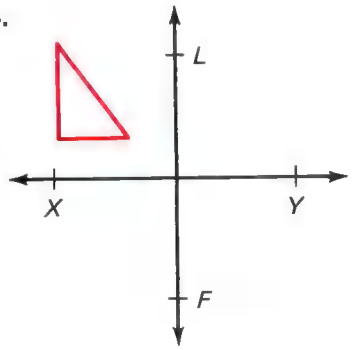


3.

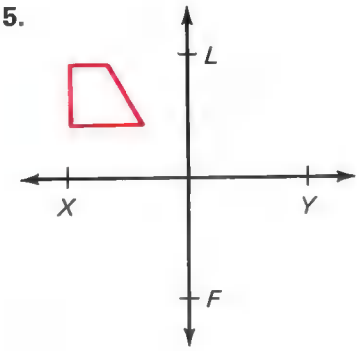


Draw the shape as it will look if you *flip* it over $\overleftrightarrow{LF}$.

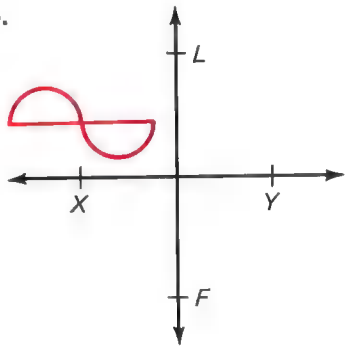
4.



5.

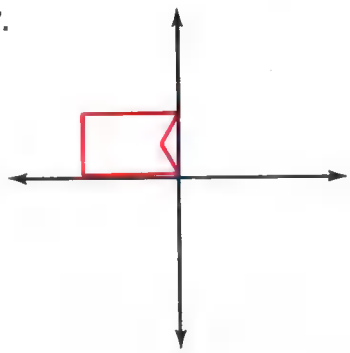


6.

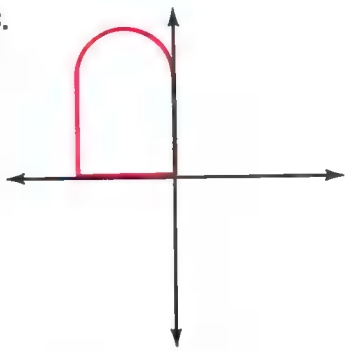


Draw the shape as it will look if you *turn* it 90° ↷ .

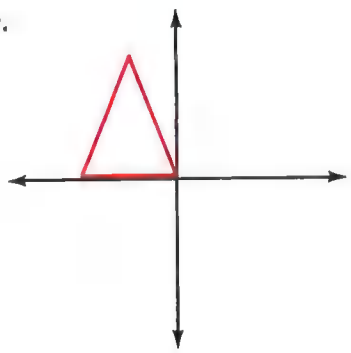
7.



8.

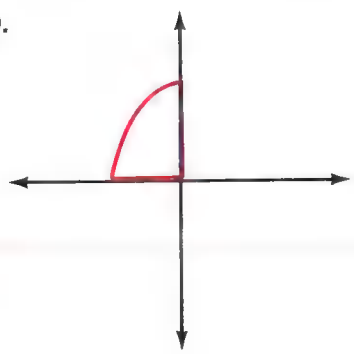


9.

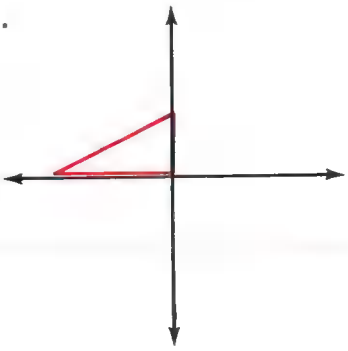


Draw the shape as it will look if you *turn* it 180° ↷ .

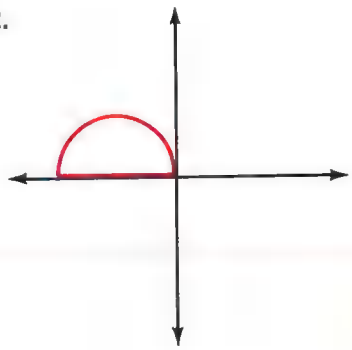
10.



11.



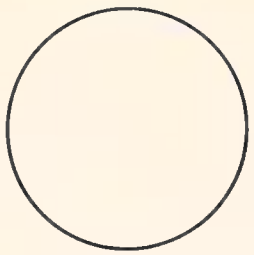
12.



Name _____

Circles — Congruence

1. Draw a line segment to separate the circle into two semicircles.



2. Label the points where the line segment intersects the *circumference* C and D.

3. $\overline{CD}$ is a _____.

4. Draw a line segment that is *perpendicular* to $\overline{CD}$ and intersects $\overline{CD}$ at the center of the circle. Label the points where the segment intersects the circumference X and Y.

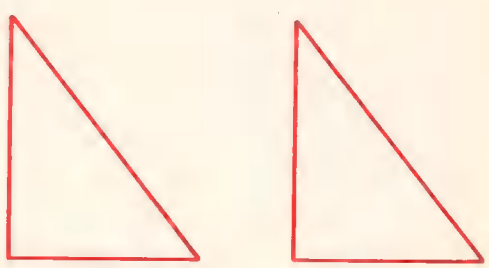
***5.** A semicircle looks like a familiar measuring instrument. Can you name it? _____

***6.** How many degrees in a semicircle? _____

7. Draw two line segments that are congruent.

8. Do they have the same length? _____

9. Are the two triangles congruent? _____



10. Are the matching sides the same length? _____

11. Are the matching angles the same size? _____

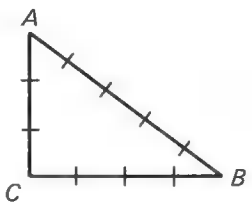
12. Can two polygons be congruent if the matching angles are different sizes? _____

13. Can two polygons be congruent if the matching sides are different sizes? _____

Area — Pythagorean Theorem

Follow the directions below.

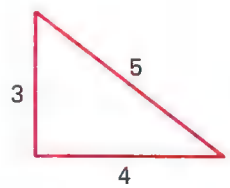
1. With $\overline{AB}$ as a side construct a square. Mark the square in square units.
2. With $\overline{AC}$ as a side construct a square and mark it in square units.
3. With $\overline{CB}$ as a side construct a square and mark it in square units.



Name the square units in the square regions

4. with $\overline{CB}$ as a side. _____
5. with $\overline{AC}$ as a side. _____
6. with $\overline{AB}$ as a side. _____

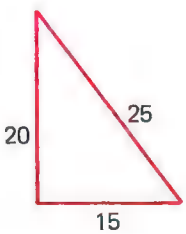
Complete the following.



7. 4^2 = _____
8. 3^2 = _____
9. 5^2 = _____

10. $4^2 + 3^2 = 5^2$

_____ + _____ = _____

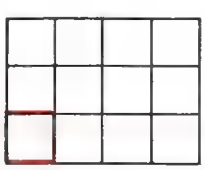


11. 20^2 = _____
12. 15^2 = _____
13. 25^2 = _____

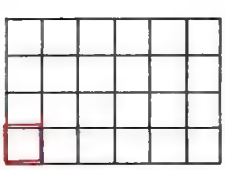
14. $20^2 + 15^2 = 25^2$

_____ + _____ = _____

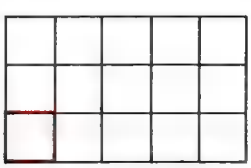
Name the area of each figure.



15. _____ sq. units



16. _____ sq. units



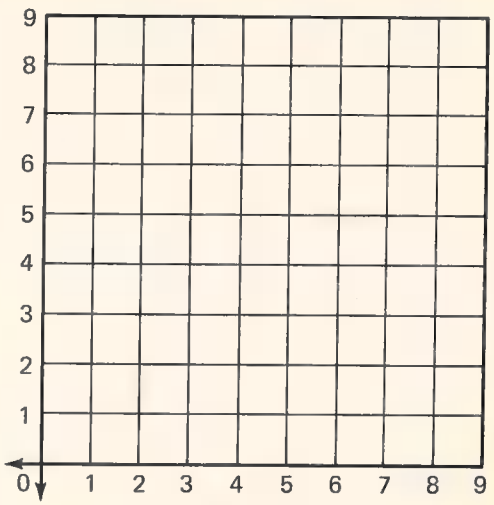
17. _____ sq. units

18. _____ sq. units

Name _____

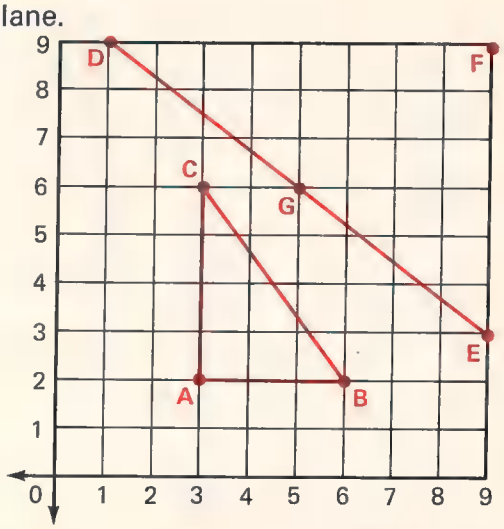
Number Planes
Number Pairs

On the number plane at the right, label



1. $A(2, 2)$
2. $B(8, 2)$
3. $C(5, 6)$
4. $D(5, 2)$
5. Join points A and B, points B and C, points C and A, and points C and D.
6. The figure ABC is an _____ triangle.
7. The figure ACD is a _____ triangle.
8. To find the length of $\overline{AC}$, use the Pythagorean equation $a^2 + b^2 = c^2$. _____

Write the number pairs for the points on the number plane.



9. A _____
10. B _____
11. C _____
12. D _____
13. E _____
14. F _____

Use the equation $a^2 + b^2 = c^2$ to find the number of units of length in the line segment.

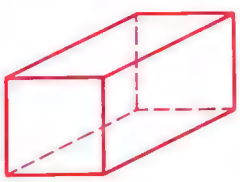
15. $\overline{BC}$ = _____
16. $\overline{DE}$ = _____
17. $\overline{DG}$ _____
18. $\overline{GE}$ _____
19. A boat travels 9 miles east then 12 miles north. How far is it from the starting point? _____

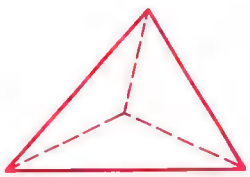
Planes — Closed Surfaces

Name the number of line segments needed to form the closed curve.

1. rectangle _____
2. hexagon _____
3. quadrilateral _____
4. octagon _____
5. pentagon _____
6. triangle _____

Write the name, number of edges, and number of faces for each figure.

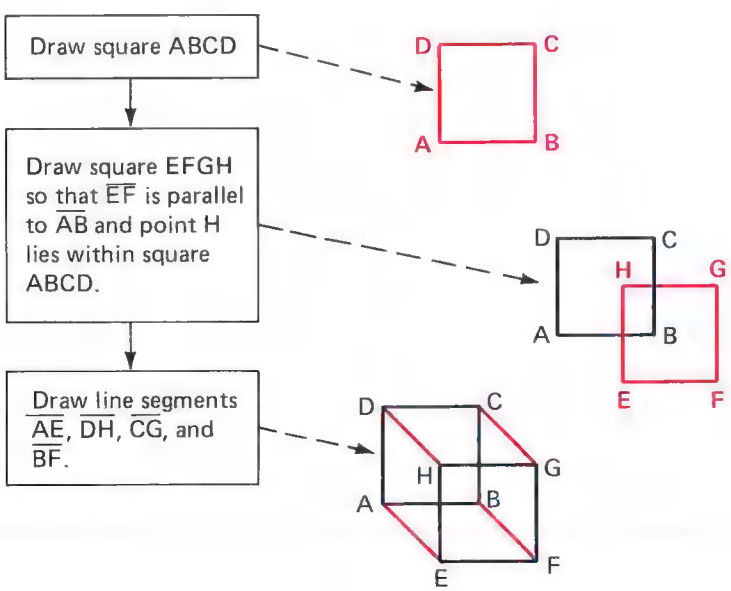




Name	7. _____	10. _____	13. _____
Number of edges	8. _____	11. _____	14. _____
Number of faces	9. _____	12. _____	15. _____

Study the flow chart, then draw a cube.

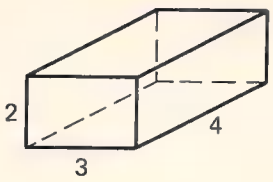
16.

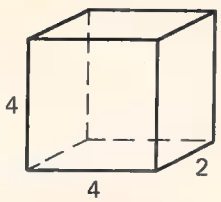


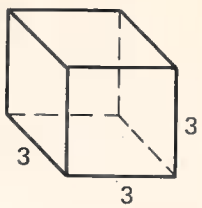
Name _____

Area — Volume

Name the surface area and volume of each shape.







Surface area **1.** _____ **3.** _____ **5.** _____

Volume **2.** _____ **4.** _____ **6.** _____

Use the formula $l \times w \times h = V$ to name the volume in each rectangular prism.

	l	*w*	*h*	*V*
7.	3	4	8	
8.	6	9	4	
9.	20	10	30	
10.	20	20	5	

Name a possible *l*, *w*, and *h* for a rectangular prism that has the given volume.

	l	*w*	*h*	*V*
11.				16
12.				24
13.				18
14.				120

Just for Fun.

$1^3 = 1 \times 1 \times 1 = 1$

$2^3 = 2 \times 2 \times 2 = 3 + 5 =$ _____

These are called cube numbers. Do you see the pattern?

15. $3^3 = 3 \times 3 \times 3 = 7 +$ _____ $+$ _____ $=$ _____

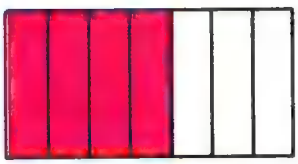
16. $4^3 = 4 \times 4 \times 4 = 13 +$ _____ $+$ _____ $+$ _____ $=$ _____

17. $5^3 = 5 \times 5 \times 5 =$ _____ $+$ _____ $+$ _____ $+$ _____ $+$ _____ $=$ _____

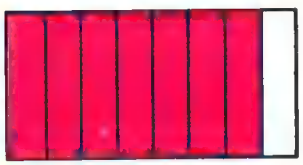
chapter 5
fractional numbers

Meaning of Fractions

Name the fraction for the shaded part.



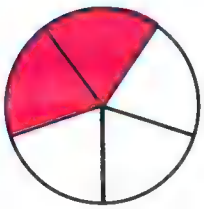
1. _____



2. _____

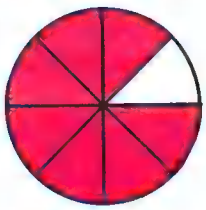
3. _____

Complete the equation.



4. $2 \times \frac{1}{\square} =$ _____

5. $3 \times \frac{1}{\square} =$ _____



6. $7 \times \frac{1}{\square} =$ _____

Write a fraction for each word phrase and then circle the numerator.

7. three of the four boys _____

8. nine out of ten times _____

9. six of the nine girls _____

10. a forty percent chance _____

Complete the equations.

11. $4 \times \frac{1}{7} =$ _____

12. $7 \times \frac{1}{9} =$ _____

13. $\frac{4}{11} =$ _____ $\times \frac{1}{11}$

14. $\frac{2}{3} =$ _____ $\times \frac{1}{3}$

15. $6 \times \frac{1}{11} =$ _____

16. $6 \times \frac{1}{7} =$ _____

17. $\frac{3}{4} =$ _____ $\times \frac{1}{4}$

18. $\frac{4}{7} =$ _____ $\times \frac{1}{7}$

19. $5 \times \frac{1}{8} =$ _____

20. $3 \times \frac{1}{4} =$ _____

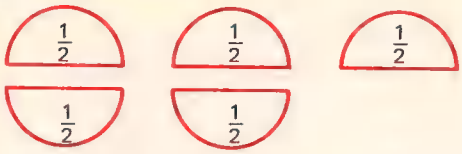
21. $\frac{7}{8} =$ _____ $\times \frac{1}{8}$

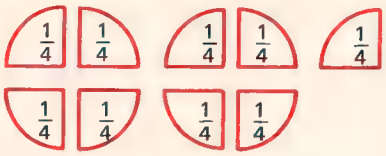
22. $\frac{7}{12} =$ _____ $\times \frac{1}{12}$

Name _____

Mixed Numerals

Fill in the blank.





1. How many halves? _____

2. $\frac{5}{2}$ is _____ wholes and $\frac{\square}{2}$.

3. $\frac{5}{2} = \square\frac{1}{2}$

4. How many fourths? _____

5. $\frac{9}{4}$ is _____ wholes and $\frac{\square}{4}$.

6. $\frac{9}{4} = \square\frac{1}{4}$

Complete the equation.

7. $\frac{14}{5} = \frac{5}{5} + \frac{5}{5} + \frac{\square}{5} = 2\frac{4}{5}$

8. $\frac{12}{7} = \frac{\square}{7} + \frac{5}{7} =$ _____

9. $\frac{8}{3} = \frac{3}{3} + \frac{\square}{3} + \frac{\square}{3} =$ _____

10. $\frac{7}{2} = \frac{\square}{2} + \frac{\square}{2} + \frac{\square}{2} + \frac{\square}{2} =$ _____

Name as a mixed numeral.

11. $\frac{7}{3} =$ _____

12. $\frac{9}{4} =$ _____

13. $\frac{5}{4} =$ _____

14. $\frac{15}{4} =$ _____

15. $\frac{7}{2} =$ _____

16. $\frac{13}{5} =$ _____

17. $\frac{9}{5} =$ _____

18. $\frac{11}{3} =$ _____

Name as fractions.

19. $2\frac{3}{4} =$ _____

20. $4\frac{2}{7} =$ _____

21. $5\frac{1}{3} =$ _____

22. $6\frac{1}{5} =$ _____

23. $6\frac{1}{7} =$ _____

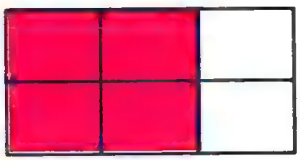
24. $9\frac{2}{6} =$ _____

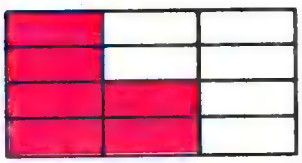
25. $2\frac{3}{5} =$ _____

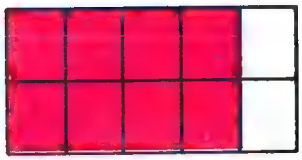
26. $3\frac{3}{8} =$ _____

Equivalent Fractions — Multiplication Division Relationship

Name the fraction for the shaded part in 2 ways.





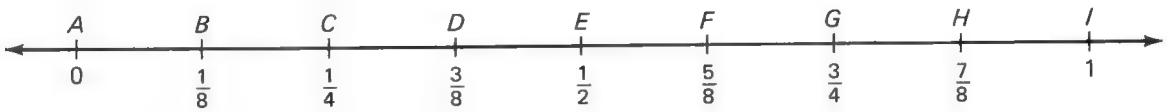


1. $\frac{2}{3}$ = _____

2. _____ = _____

3. _____ = _____

Name the points on the number line in two other ways.



4. *A* _____, _____

5. *B* _____, _____

6. *C* _____, _____

7. *D* _____, _____

8. *E* _____, _____

9. *F* _____, _____

10. *G* _____, _____

11. *H* _____, _____

12. *I* _____, _____

Write each multiplication as a division.

13. $\frac{1}{3} \times 12 =$ $\square \div 3$ _____

15. $\frac{1}{7} \times 14 =$ _____

17. $\frac{1}{8} \times 24 =$ _____

19. $\frac{1}{9} \times 18 =$ _____

14. $\frac{1}{4} \times 8 =$ _____

16. $\frac{1}{5} \times 15 =$ _____

18. $\frac{1}{7} \times 21 =$ _____

20. $\frac{1}{8} \times 16 =$ _____

Complete the equation.

21. $\frac{4}{12} \times 12 =$ _____

22. $\frac{5}{12} \times 12 =$ _____

23. $\frac{5}{6} \times 6 =$ _____

24. $\frac{4}{7} \times 7 =$ _____

25. $\frac{7}{8} \times 8 =$ _____

26. $\frac{3}{5} \times 5 =$ _____

Name _____

Using Renaming to Multiply Fractions

Use renaming to complete the equation.

1. $\frac{1}{4} \times \frac{4}{5} =$

$(\frac{1}{4} \times 4) \times \frac{1}{5} =$

--------- $\times \frac{1}{5} =$ ---------

2. $\frac{1}{8} \times \frac{8}{9} =$

$(\frac{1}{8} \times$ -------) $\times \frac{1}{9} =$

--------- $\times \frac{1}{9} =$ ---------

Here is another way to use renaming. Complete the equation.

3. $\frac{1}{5} \times \frac{1}{4} =$

$(\frac{1}{5} \times$ -------) $\times \frac{1}{20} =$

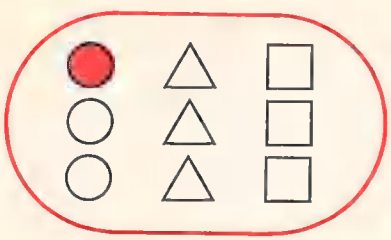
--------- $\times \frac{1}{20} =$ ---------

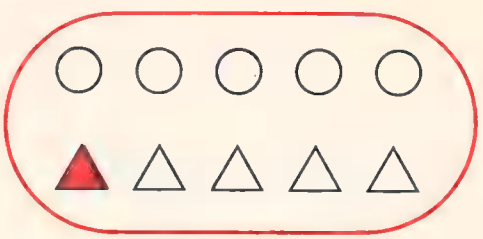
4. $\frac{1}{3} \times \frac{1}{5} =$

$(\frac{1}{3} \times$ -------) $\times \frac{1}{15} =$

--------- $\times \frac{1}{15} =$ ---------

Name the products.





5. _____ of the set are circles.

6. _____ of the circles are red.

7. $\frac{1}{3} \times \frac{1}{3}$ = _____ of the total *set* is red.

8. _____ of the set are triangles.

9. _____ of the triangles are red.

10. $\frac{1}{2} \times \frac{1}{5}$ or _____ of the total set is red.

Name the product.

11. $\frac{1}{3} \times \frac{1}{5} =$ _____

12. $\frac{1}{2} \times \frac{1}{4} =$ _____

13. $\frac{2}{3} \times \frac{1}{5} =$ _____

14. $\frac{3}{5} \times \frac{1}{2} =$ _____

15. $\frac{2}{3} \times \frac{4}{5} =$ _____

16. $\frac{3}{5} \times \frac{7}{8} =$ _____

Using 1 to Rename Fractions

Write the name for 1 and rename the fraction.

1. $\frac{2 \times \square}{3 \times \square} = \frac{\square}{6}$

2. $\frac{7 \times \square}{8 \times \square} = \frac{\square}{24}$

3. $\frac{3 \times \square}{4 \times \square} = \frac{\square}{16}$

4. $\frac{3 \times \square}{7 \times \square} = \frac{\square}{21}$

5. $\frac{4 \times \square}{5 \times \square} = \frac{\square}{20}$

6. $\frac{2 \times \square}{3 \times \square} = \frac{\square}{15}$

Use the pattern to name the equivalent fractions.

7. $\frac{1}{2} = \left\{ \frac{\boxed{2}}{4}, \frac{\boxed{3}}{6}, \frac{\square}{8}, \frac{\square}{10}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \ldots \right\}$

8. $\frac{1}{3} = \left\{ \frac{\boxed{2}}{6}, \frac{\boxed{3}}{9}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \ldots \right\}$

9. $\frac{2}{5} = \left\{ \frac{\boxed{4}}{10}, \frac{\boxed{6}}{15}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \ldots \right\}$

10. $\frac{3}{4} = \left\{ \frac{\boxed{6}}{8}, \frac{\boxed{9}}{12}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \ldots \right\}$

Try This!

11. Multiplying by 1 can change the _____ but not the number.

12. The set of names for 1 is an _____ set.

13. All fractions that name the same number are called _____.

14. Can any whole number be named as a fraction? _____

Unscramble the letters.

15. L Q I A T E V E U N

_____

16. U E T R M R N A O

_____

17. E N O A D M N I T O R

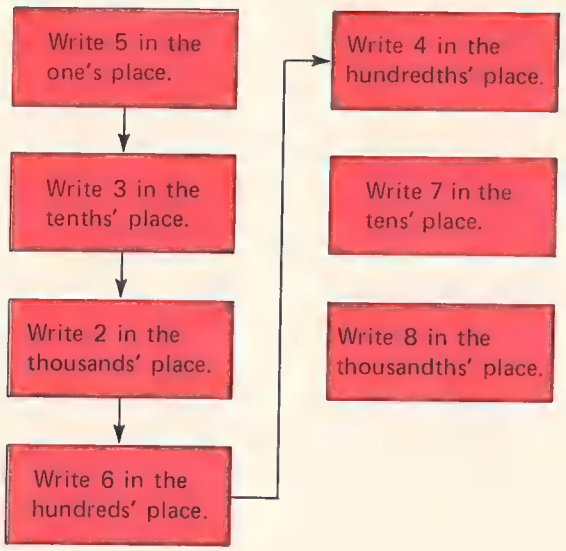
_____

Name _____

Decimals — Tenths and Hundredths

Follow the directions.

1.



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Draw a line under the numeral in the tenths' place.

2. 6.234 **3.** .543 **4.** 1.084 **5.** .34 **6.** 4.5

Draw a line under the numeral in the hundredths' place.

7. 2.934 **8.** 8.765 **9.** .7394 **10.** .426 **11.** 7.0342

In Examples 7–11 draw a ring around the numeral in the thousandths' place.

Place the decimal in the numeral to make sense.

12. He ran the mile in 401 minutes.

13. His body temperature was 98643 degrees.

14. His car averaged 5963 miles per hour on the trip.

15. The pen cost 195 dollars.

16. Gasoline cost 358 cents per gallon.

17. He averaged 1843 miles per gallon of gasoline.

Percent

Write each fraction or decimal as a percent.

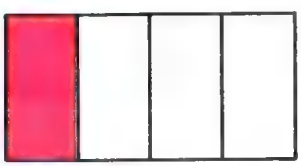
1. $\frac{3}{10}$ = _____ **3.** $\frac{1}{4}$ = _____ **5.** $\frac{3}{4}$ = _____ **7.** $\frac{7}{10}$ = _____

2. $\frac{23}{100}$ = _____ **4.** $\frac{5}{10}$ = _____ **6.** .06 = _____ **8.** 1.38 = _____

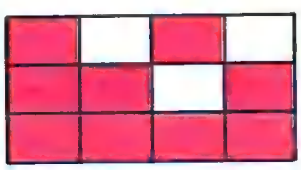
Write each percent as a decimal and as a fraction.

60%	50%	80%	35%	65%
9. _____	**11.** _____	**13.** _____	**15.** _____	**17.** _____
10. _____	**12.** _____	**14.** _____	**16.** _____	**18.** _____

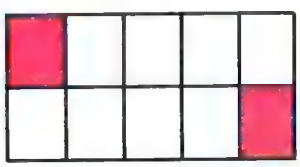
Name the percent that is shaded.



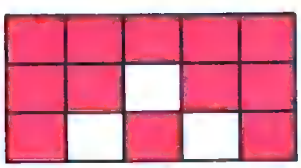
19. _____



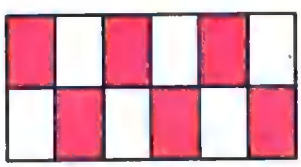
20. _____



21. _____



22. _____



23. _____

24. _____

Try This !

25. What percent names 1 ? _____ 2 ? _____ 3 ? _____

26. What is 200% of 6 ? _____ 400% of 5 ? _____ 300% of 8 ? _____

27. Write 343% as a decimal _____; as a fraction. _____

Name _____

Using Percents

Mark the sale price on the ticket if

1. $12 shoes are reduced 20%.
2. $4 blouses are reduced 20%.
3. $15 sweaters sell for half price.
4. $2 belts are reduced 50%.
5. $3.90 shirts are reduced 10%.
6. $8 skirts are reduced 25%.

Here are some percents that are used frequently.
Name the percent as a fraction.

7. $12\frac{1}{2}\%$ _____
8. $62\frac{1}{2}\%$ _____
9. $33\frac{1}{3}\%$ _____
10. $87\frac{1}{2}\%$ _____
11. $37\frac{1}{2}\%$ _____
12. $16\frac{2}{3}\%$ _____
13. $66\frac{2}{3}\%$ _____
14. $83\frac{1}{3}\%$ _____

chapter 6
number theory

Naming Factors

Write equations to show the factors for the numbers. List the set of factors.

14	28	42
1. 14 ÷ 1 = _____	**4.** _____	**8.** _____
2. 14 ÷ _____ = 7	**5.** _____	**9.** _____
3. {1, _____, 7, _____}	**6.** _____	**10.** _____
7. {_____, _____, _____, _____, _____, _____}		**11.** _____
12. {_____, _____, _____, _____, _____, _____, _____, _____}		

List the factors of

13. 24 {_____}

14. 16 {_____}

15. 48 {_____}

16. 32 {_____}

17. 25 {_____}

18. 63 {_____}

Just for Fun

19. List the factors of 12.

{_____}

20. List the factors of 360.

{_____}

21. We frequently use 12 in our measurement system. 360 is the number of degrees in a _____. Can you think of a reason why these numbers might have been used? _____

_____

Name _____

Prime Numbers

Name the following sets of primes.

1. {primes which are less than 20} = {_____}

2. {primes which are even numbers} = {_____}

3. {primes which are between 20 and 40} = {_____}

4. {primes which have single digit numerals} = {_____}

To name a sum as two primes, follow these steps:

36 = 2 + 34 34 is not a prime so we try the next prime, 3.
36 = 3 + 33 33 is not a prime so we try the next prime, 5.
36 = 5 + 31 31 and 5 are both prime numbers.

Name each sum as two primes.

5. 48 = _____ + _____
6. 69 = _____ + _____
7. 55 = _____ + _____
8. 19 = _____ + _____
9. 28 = _____ + _____
10. 33 = _____ + _____
11. 38 = _____ + _____
12. 13 = _____ + _____
13. 44 = _____ + _____
14. 88 = _____ + _____
15. 72 = _____ + _____
16. 96 = _____ + _____

17. Can 51 be named as the sum of two primes? _____

18. Can 29 be named as the sum of two primes? _____

19. Can all whole numbers be named as the sum of two primes? _____

20. Can all even numbers be named as the sum of two primes? _____

Prime Factorization

Name the prime factorization using exponents.

1. 28 = _____

2. 63 = _____

3. 64 = _____

4. 32 = _____

5. 81 = _____

6. 56 = _____

7. 42 = _____

8. 54 = _____

9. 72 = _____

Name the number for each prime factorization.

10. $7^2 \times 3^2$ = _____

11. $2^3 \times 3^2$ = _____

12. $4^2 \times 3^3$ = _____

13. $5^2 \times 3^2$ = _____

14. $7^2 \times 3^3$ = _____

15. $2^4 \times 11^2$ = _____

Complete the factor tree.

16. 32

17. 45

18. 36

19. 35

20. 48

21. 26

Just for Fun

Complete the factor tree.

22. 1015

23. 1302

24. 899

Name _____

Factors — Common Factors

List the set of factors for each number.

1. 88 {_____}

2. 96 {_____}

3. 66 {_____}

4. 60 {_____}

5. 100 {_____}

Name the factors for each pair of numbers. Then name the common factors and GCF for each pair of numbers.

	Factors	Common factors	GCF
6.	36 {_____} 42 {_____}	_____	_____
7.	28 {_____} 84 {_____}	_____	_____

Complete the table.

8.	Number	16	25	36	60	66	81	100
	Number of factors	5						

9. Which numbers have an odd number of factors? _____

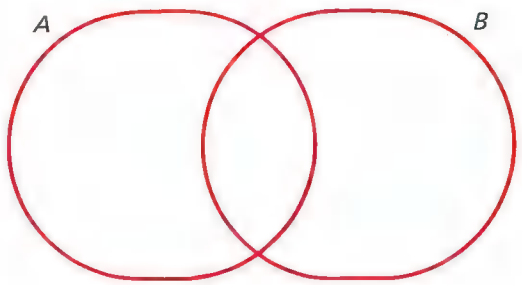
10. Can you see a pattern for numbers with an odd number of factors? What is it?

_____

Common Multiples — Least Common Multiples

Write the multiples in the set diagram.

1. A = {multiples of 3 less than 32}
2. B = {multiples of 5 less than 32}



Complete the following.

3. $A \cap B$ = {_____}

4. The LCM of 3 and 5 (other than 0) is _____.

5. C = {multiples of 9 which are less than 60} = {_____}

6. D = {multiples of 6 which are less than 60} = {_____}

7. $C \cap D$ = {_____}

8. LCM of 6 and 9 is _____.

9. E = {multiples of 7 which are less than 64} = {_____}

10. F = {multiples of 9 which are less than 64} = {_____}

11. $E \cap F$ = {_____}

12. LCM of 7 and 9 is _____.

13. The members in the intersection of each pair of sets above

    are called _____.

Use the number line to complete these problems.

14. Put a ring around each multiple of 2, less than 20.
15. Put an X on each multiple of 3, less than 20.
16. List the set of common multiples of 2 and 3, less than 20.

    {_____}

Name _____

Multiples of 2, 4, 5, 8, and 10

A = {69, 78, 85, 300, 255, 177, 228, 348, 568, 976, 1339, 4328, 4176, 7888, 70,000, 8945}

Write a subset of set A that names

1. multiples of 2: {_____}

2. multiples of 4: {_____}

Complete the sentence.

3. The multiples of 2 are all _____ numbers.

4. The multiples of 4 are also multiples of _____.

Describe the pattern for the multiples below.

5. Multiples of 5: {5, 10, 15, 20, 25, 30, 35, 40, 45, . . .}

_____

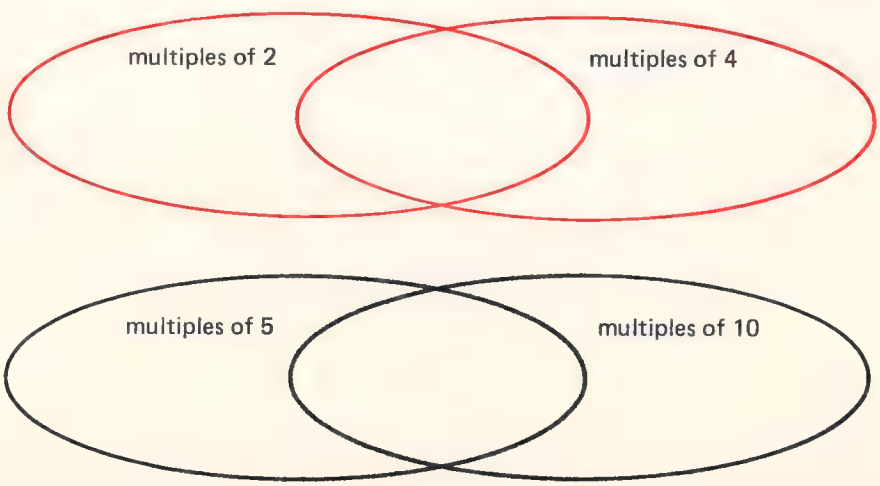
6. Multiples of 10: {10, 20, 30, 40, 50, 60, 70, 80, . . .}

_____

Put the numerals into the set rings.

264, 384, 396, 465, 992, 738, 545, 2386, 6944, 7392, 8940

7.



Multiples of 3, 6, and 9

$A = \{636, 495, 792, 864, 7329, 6939, 843\}$

List the members in the subset of set A that are

1. multiples of 3: {_____}
2. multiples of 6: {_____}
3. multiples of 9: {_____}
4. If the number is a multiple of 9, draw a line under the numeral.

68,391	7254	698,751	436,293
73,429	64,386	7543	2654

Just for Fun

Complete the equations to discover the pattern.

$(9 \times 9) + 7 =$ _____

$(9 \times 98) + 6 =$ _____

$(9 \times 987) + 5 =$ _____

$(9 \times 9876) + 4 =$ _____

$(9 \times 98{,}765) + 3 =$ _____

$(9 \times 987{,}654) + 2 =$ _____

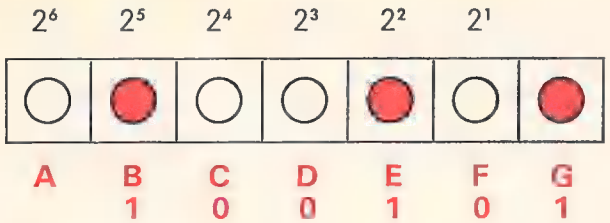
$(9 \times 9{,}876{,}543) + 1 =$ _____

$(9 \times 98{,}765{,}432) + 0 =$ _____

$(9 \times 987{,}654{,}321) - 1 =$ _____

Name _____

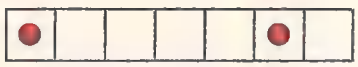
Binary Numerals



When a bulb is red we have a set of that place value.
Light B shows 1 set of 32.
Light E shows 1 set of 4.
Light G shows 1 set of 1.
The base two numeral shown is written 100101_{two}.
Its value in base ten is 37.

Write the binary numeral. Then give its value in base ten.

1. _____two = _____ten



3. _____two = _____ten

5. _____two = _____ten

2. _____two = _____ten

4. _____two = _____ten

6. _____two = _____ten

Name the sum or difference.

7. $110_{two} + 100_{two}$

8. $111_{two} - 101_{two}$

9. $1111_{two} - 1111_{two}$

10. $1110_{two} - 1011_{two}$

11. $1111_{two} - 1010_{two}$

12. Karl had 10110_{two} cents. He spent 1010_{two} cents.

How much did he have left? _____

13. It takes 101101_{two} minutes to go downtown.

Is that longer or shorter than 1 hour? _____

7 and 12 Clocks

Ken thought about 12-clock arithmetic in the following way:
If I want to pack my doughnuts in packages of 12 and I have one tray of 8 doughnuts and one of 9, then I will have 5 doughnuts "left over." $8 + 9 \overset{12}{=} 5$

In each exercise below imagine you are packing doughnuts in packages of one dozen each. The clock equation tells you how many doughnuts are "left over." Complete the table.

	Tray	Tray	Equation
1.	8	5	$8 + 5 \overset{12}{=}$ _____
2.	9	7	
3.		10	_____ $+ 10 \overset{12}{=} 9$
4.	10	10	
5.	6		$6 +$ _____ $\overset{12}{=} 2$

Complete the equations.

6. 4 boxes of 8 doughnuts. $4 \times 8 \overset{12}{=}$ _____

7. $3 + 10 \overset{12}{=}$ _____ **8.** $5 \times 6 \overset{12}{=}$ _____ **9.** $7 \times 2 \overset{12}{=}$ _____ **10.** $4 + 9 \overset{12}{=}$ _____

Complete the addition and multiplication tables for the 7-clock numbers.

11.

+	0	1	2	3	4	5	6
0							
1							
2							
3							
4							
5							
6							

12.

×	0	1	2	3	4	5	6
0							
1							
2							
3							
4							
5							
6							

chapter 7

Name _____

addition, subtraction with fractional numbers

Renaming Fractions — Adding on the Number Line

Rename each fraction.

1. $\frac{2 \times \square}{3 \times \square} = \frac{6}{9}$

2. $\frac{5 \times \square}{6 \times \square} = \frac{\square}{18}$

3. $\frac{9 \times \square}{10 \times \square} = \frac{\square}{30}$

4. $\frac{10 \div \square}{12 \div \square} = \frac{\square}{6}$

5. $\frac{18 \div \square}{24 \div \square} = \frac{\square}{4}$

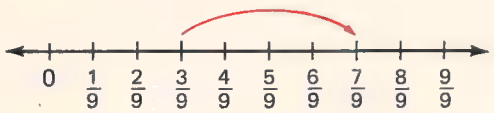
6. $\frac{6 \times \square}{7 \times \square} = \frac{\square}{21}$

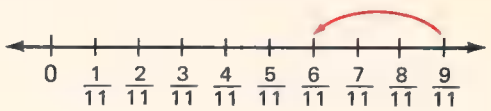
7. $\frac{7}{8} = \frac{\square}{16}$

8. $\frac{15}{25} = \frac{\square}{5}$

9. $\frac{24}{28} = \frac{\square}{7}$

Complete the equation.





10. $\frac{3}{9} + \frac{4}{9} =$ _____

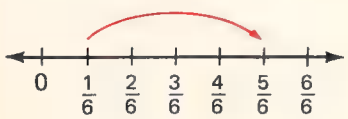
11. $\frac{9}{11} - \frac{3}{11} =$ _____

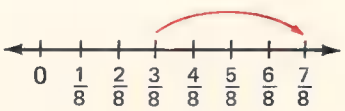
12. $\frac{7}{8} - \frac{3}{8} =$ _____

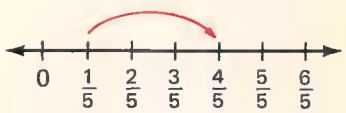
13. $\frac{5}{9} - \frac{3}{9} =$ _____

14. $\frac{6}{11} + \frac{3}{11} =$ _____

Write the equation shown on the number line.



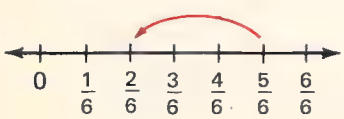


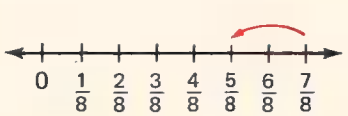


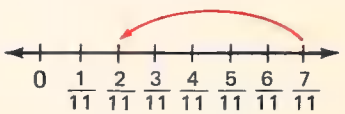
15. _____

17. _____

19. _____







16. _____

18. _____

20. _____

Distributive Property

$\frac{3}{8} + \frac{2}{8}$

$\left(3 \times \frac{1}{8}\right) + \left(2 \times \frac{1}{8}\right)$ Step 1 Rename the fractions using multiplication.

$\left(3 + 2\right) \times \frac{1}{8} = \frac{5}{8}$ Step 2 Multiply the common factor by the **sum** of the other **2 factors**.

Complete the equations using the method above.

1. $\frac{2}{7} + \frac{3}{7}$

$= (\_\_\_\_\_ \times \_\_\_\_\_) + (\_\_\_\_\_ \times \_\_\_\_\_)$

$= (\_\_\_\_\_ + \_\_\_\_\_) \times \_\_\_\_\_ = \_\_\_\_\_$

2. $\frac{4}{8} + \frac{3}{8}$

3. $\frac{5}{11} + \frac{3}{11}$

4. $\frac{9}{11} - \frac{4}{11}$

5. $\frac{4}{9} - \frac{3}{9}$

6. $\frac{11}{12} - \frac{6}{12}$

Short form $\frac{3}{11} + \frac{7}{11} = \frac{3 + 7}{11} = \frac{10}{11}$

Use the short form to name the sum or difference.

7. $\frac{3}{8} + \frac{4}{8} =$ _____

8. $\frac{5}{7} + \frac{1}{7} =$ _____

9. $\frac{4}{7} + \frac{2}{7} =$ _____

10. $\frac{7}{8} - \frac{3}{8} =$ _____

11. $\frac{5}{6} - \frac{4}{6} =$ _____

12. $\frac{9}{10} - \frac{6}{10} =$ _____

Name as a mixed numeral.

13. $\frac{5}{4} =$ _____

14. $\frac{9}{8} =$ _____

15. $\frac{11}{7} =$ _____

16. $\frac{13}{5} =$ _____

Name as a fraction.

17. $1\frac{1}{3} =$ _____

18. $1\frac{2}{7} =$ _____

19. $1\frac{3}{4} =$ _____

20. $1\frac{5}{8} =$ _____

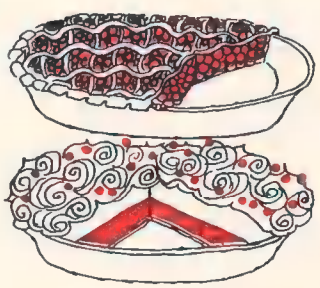
Name _____

Adding and Subtracting Fractions Greater than 1

Rename the numbers.

1. $\frac{2}{3} = \frac{\square}{12}$
2. $\frac{5}{6} = \frac{\square}{18}$
3. $\frac{4}{5} = \frac{\square}{10}$
4. $\frac{5}{15} = \frac{\square}{3}$
5. $1\frac{1}{3} = \frac{\square}{3}$
6. $2\frac{1}{5} = 1\frac{\square}{5}$
7. $3\frac{1}{4} = 2\frac{\square}{4}$
8. $4\frac{1}{3} = 3\frac{\square}{3}$
9. $3\frac{1}{2} = 2\frac{\square}{6}$
10. $4\frac{1}{4} = 3\frac{\square}{12}$
11. $7\frac{1}{3} = 6\frac{\square}{6}$
12. $3\frac{1}{5} = 2\frac{\square}{10}$

Write and solve the equations.



13. Bill had $\frac{2}{3}$ of a pie. Tom had $\frac{4}{5}$ of a pie.

    How much did they have together? _____

14. Mary had $1\frac{1}{4}$ cups of sugar. She used $\frac{2}{3}$ of a cup. How much did she have left? _____

15. Mrs. Rose bought $1\frac{3}{4}$ pounds of cashews and $2\frac{2}{3}$ pounds of peanuts. How many pounds in all?

    _____

16. Sue had $1\frac{3}{4}$ quarts of red paint and $2\frac{1}{3}$ quarts of white paint. How much paint in all? _____

17. Michelle made $4\frac{1}{3}$ quarts of punch for the party. They used $2\frac{3}{4}$ quarts. How much was left? _____

18. There were 5 gallons of gas in the tank. $1\frac{7}{8}$ gallons were used. How much was left? _____

Multiplying a Fraction by a Whole Number

Name the product.

1. 3 fourths
$\times 2$

_____ fourths

3. 5 sixths
$\times 3$

_____ sixths

5. 4 sevenths
$\times 5$

_____ sevenths

7. 3 eighths
$\times 4$

_____ eighths

2. $\frac{3}{4} \times 2 =$ _____

4. $\frac{5}{6} \times 3 =$ _____

6. $\frac{4}{7} \times 5 =$ _____

8. $\frac{3}{8} \times 4 =$ _____

Name the product.

9. $2\frac{3}{4} \times 3$

2×3	$\frac{3}{4} \times 3$
_____ +	_____ = _____

10. $4\frac{2}{3} \times 5$

4×5	$\frac{2}{3} \times 5$
_____ +	_____ = _____

11. $5\frac{2}{7} \times 4$

5×4	$\frac{2}{7} \times 4$
_____ +	_____ = _____

12. $3\frac{4}{5} \times 2$

3×2	$\frac{4}{5} \times 2$
_____ +	_____ = _____

13. $3\frac{1}{4}$
$\times 5$

15. $4\frac{1}{5}$
$\times 8$

17. $2\frac{1}{6}$
$\times 7$

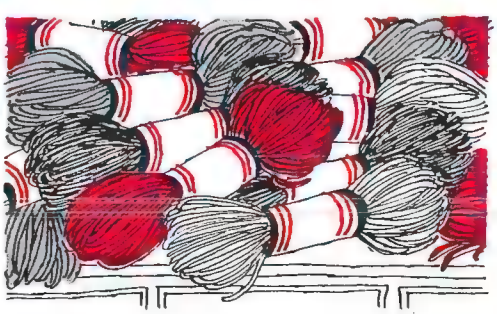
19. $3\frac{1}{8}$
$\times 9$

14. $6\frac{1}{3}$
$\times 7$

16. $7\frac{2}{5}$
$\times 9$

18. $9\frac{3}{4}$
$\times 4$

20. $7\frac{3}{7}$
$\times 8$



21. Ruth wants to knit 4 pair of socks. If each pair takes $1\frac{3}{4}$ ounces of yarn, how much yarn will she need? _____

Name _____

Subtracting Fractions

Name the difference.

1. $4\frac{1}{8} - 3\frac{4}{8}$

2. $3\frac{2}{5} - 1\frac{4}{5}$

3. $5\frac{3}{7} - 2\frac{5}{7}$

4. $9\frac{2}{8} - 5\frac{3}{8}$

5. $7\frac{1}{4} - 2\frac{3}{4}$

6. $3\frac{1}{4} - 1\frac{1}{2}$

7. $5\frac{1}{3} - 1\frac{5}{6}$

8. $4\frac{2}{5} - 2\frac{7}{10}$

9. $6\frac{1}{4} - 2\frac{3}{8}$

10. $7\frac{1}{3} - 2\frac{5}{12}$

11. $4\frac{1}{3} - 2\frac{1}{2}$

12. $6\frac{2}{5} - 1\frac{1}{2}$

13. $3\frac{2}{3} - \frac{7}{8}$

14. $6\frac{1}{2} - 3\frac{4}{5}$

15. $7\frac{3}{4} - 2\frac{4}{5}$

Try This! (Do step 1 first.)

To subtract $5\frac{4}{8}$ Step 2: add $\frac{1}{8}$ $5\frac{5}{8}$

$-2\frac{7}{8}$ Step 1: add $\frac{1}{8}$ -3

$2\frac{5}{8}$

$8\frac{3}{7}$ Step 2: add $\frac{2}{7}$ $8\frac{5}{7}$

$-1\frac{5}{7}$ Step 1: add $\frac{2}{7}$ -2

$6\frac{5}{7}$

Use the method above to subtract.

16. $6\frac{1}{3} - 2\frac{2}{3}$

17. $6\frac{5}{9} - 2\frac{6}{9}$

18. $7\frac{2}{5} - 2\frac{3}{5}$

Try the method above on these exercises.

19. $6 - 2\frac{1}{3}$

20. $8 - 2\frac{4}{5}$

21. $9 - 4\frac{3}{8}$

Adding and Subtracting Decimals

Name the sum.

1. 3 tenths
+ 8 tenths
_____ tenths

3. 4 tenths
+ 9 tenths
_____ tenths

5. 6 and 4 tenths
+ 2 and 7 tenths
_____ and _____ tenths

7. 2 and 38 hundredths
+ 3 and 29 hundredths
_____ and _____ hundredths

2. .3
+ .8

4. .4
+ .9

6. 6.4
+ 2.7

8. 2.38
+ 3.29

Name the sum or difference.

9. .7
+ .5

11. 1.2
− .8

13. 3.4
− .6

15. 2.7
+ 1.8

17. 9.3
− 2.4

10. 2.23
+ .84

12. 7.29
− .36

14. 8.24
− 3.29

16. 6.25
+ 4.96

18. 7.38
+ 2.95

Just for Fun

Decimus means tenth in Latin.

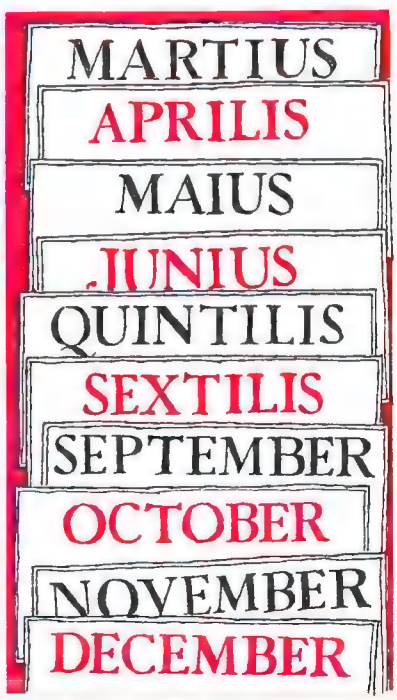
19. What month of the year is spelled similar to decimal? _____

20. Is it the tenth month of the year? _____

21. Can you explain? Hint: Look up the topic of Calendar in your encyclopedia. _____

_____

22. What number would you think of when we see October? _____ September? _____



Name _____

Multiplying Decimals

Name the product.

1. .3 × 8	**4.** .4 × 8	**7.** 4.9 × 9	**10.** 7.2 × 7	**13.** 7.53 × 3
2. .8 × 6	**5.** .5 × 5	**8.** 6.5 × 8	**11.** 6.34 × 6	**14.** 9.65 × 7
3. .9 × 3	**6.** 3.8 × 6	**9.** 8.3 × 4	**12.** 4.28 × 4	**15.** 7.24 × 8

Try This!

16. 6 + .3 + .04
× 4
24 + 1.2 + .16

Product _____

17. 7 + .4 + .02
× 8
□ + ■ + ■

Product _____

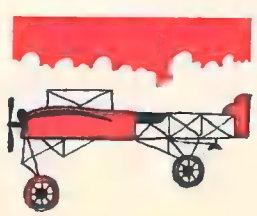
18. 2 + .9 + .08
× 8
□ + ■ + ■

Product _____

19. To get to school and back Linda walks 3.4 miles each day. If she makes the trip 5 days a week, how many miles does she travel? _____

20. In 1929, a man ran from New York to Los Angeles (3610 miles) averaging 6.86 miles per hour. At that rate how far did he run in 8 hours? _____

21. The world's air speed record in 1906 was 25.65 miles per hour. How far would that plane travel in 8 hours? _____



Multiplying by a Power of 10

Name the product.

1. $\frac{2}{10} \times \frac{3}{10} =$ _____

2. $.2 \times .3 =$ _____

3. $\frac{3}{10} \times \frac{2}{100} =$ _____

4. $.3 \times .02 =$ _____

5. $\frac{4}{10} \times \frac{2}{10} =$ _____

6. $.4 \times .2 =$ _____

Study the pattern. Then complete the equation.

$.423 \times 10 = 4.23$

$.423 \times 100 = 42.3$

$.423 \times 1000 = 423.$

7. $.387 \times 10 =$ _____

8. $.387 \times 100 =$ _____

9. $.387 \times 1000 =$ _____

10. $.983 \times 10 =$ _____

11. $.983 \times 100 =$ _____

12. $.983 \times 1000 =$ _____

Complete the sentences.

13. To multiply by 10, move the decimal point _____

14. To multiply by 100, move the decimal point _____

15. To multiply by 1000, move the decimal point _____

Since division is the opposite of multiplication

***16.** to divide by 10, move the decimal point _____

***17.** to divide by 100, move the decimal point _____

***18.** to divide by 1000, move the decimal point _____

Complete the equations.

19. $875 \div 10 =$ _____

20. $875 \div 100 =$ _____

21. $875 \div 1000 =$ _____

22. $938 \div 10 =$ _____

23. $938 \div 100 =$ _____

24. $938 \div 1000 =$ _____

25. $625 \div 10 =$ _____

26. $625 \div 100 =$ _____

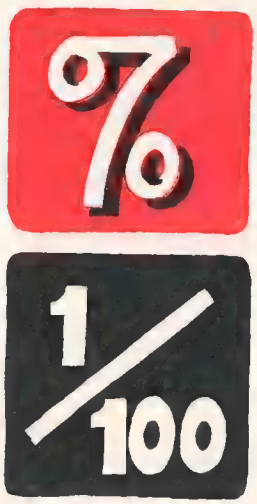
27. $625 \div 1000 =$ _____

Name _____

Percent — Probability

Complete the table.

	Fraction	Percent	Decimal	Multiplied by 10
1.	$\frac{3}{10}$		.3	3
2.	$\frac{1}{2}$			
3.	$\frac{3}{4}$			
4.	$\frac{9}{10}$			
5.	$\frac{23}{100}$			
6.	$\frac{29}{100}$			
7.	$\frac{7}{10}$			



Name the product.

8. 30% × 50 = _____

9. 50% × 184 = _____

10. 63% × 300 = _____

11. 50% × 726 = _____

12. 25% × 40 = _____

13. 10% × 964 = _____

14. 45% × 400 = _____

15. 34% × 50 = _____

16. 75% × 28 = _____

17. 12% × 200 = _____

18. 25% × 1000 = _____

19. 1% × 50 = _____

Name the probability as a fraction.

20. Eight out of ten times _____

21. A fifty-fifty chance _____

22. 9 chances out of ten _____

23. 30% of the time _____

***24.** three-to-one odds _____

25. 80% of the time _____

chapter 8
statements

Number Phrases and Sentences

Write a number phrase or sentence for each word phrase or sentence.

1. The quotient of 12 divided by 6 _____
2. The product of 67 and 96 _____
3. The difference between 16 and 50 _____
4. Six is less than 10 _____
5. Eight is greater than 5 _____
6. The product of 11 times 25 is 275 _____
7. The quotient of 63 divided by 7 is 9 _____
8. The product of 6 times 9 is less than 60 _____

Use the replacement set at the left to name the solution set.

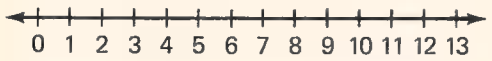
	Replacement set	Sentence	Solution set
9.	{odd numbers}	$n \times 7 = 63$	
10.	{even numbers}	$n \times 7 = 56$	
11.	{multiples of 3}	$n \times 4 = 12$	
12.	{multiples of 12}	$n < 75$	
13.	{factors of 32}	$n < 10$	
14.	{prime numbers}	$n \times 5 = 35$	
*15.	{prime numbers}	$n \div 6 = 3$	

Name _____

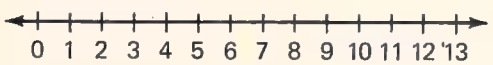
Graphing Solutions

On the number line graph the solution set for each sentence.
The replacement set is {whole numbers}.

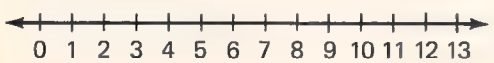
1. $n + 5 < 12$



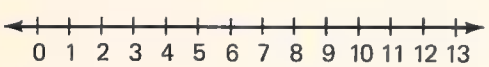
2. $n \times 3 < 15$



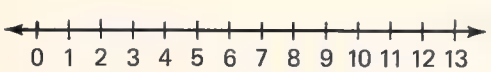
3. $n - 4 < 3$



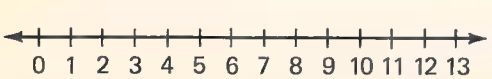
4. $n \times 4 < 16$



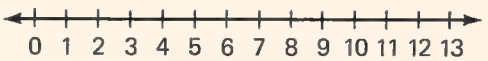
5. $n + 3 < 10$



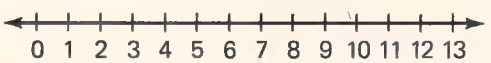
6. $n - 5 > 3$



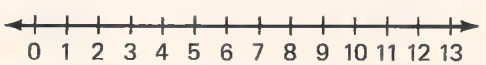
7. $1 < n < 9$



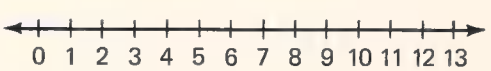
8. $3 < n < 11$



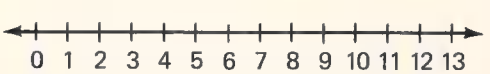
9. $4 < n < 9$



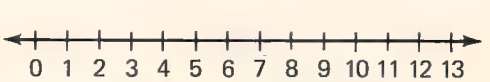
10. $5 < n < 10$



11. $5 < n < 12$



12. $2 < n < 4$



Equivalent Equations

Write an equivalent sentence for each sentence on the left.

1. The number is a multiple of 2 and 3. _____

2. The number can not be divided by two without a remainder. _____

3. The number can be divided by nine without a remainder. _____

4. The number ends in zero or five. _____

Write 4 equivalent sentences using the set of factors and product.

	{3, 9, 27}	{6, 8, 48}	{7, 9, 63}	{35, 5, 7}
5.	$3 \times 9 = \square$	9. _____	13. _____	17. _____
6.	_____	10. _____	14. _____	18. _____
7.	_____	11. _____	15. _____	19. _____
8.	_____	12. _____	16. _____	20. _____

Write at least 2 equivalent equations to solve the problem.

21. Bill has 8 points. He needed 14. How many more does he need? _____ _____

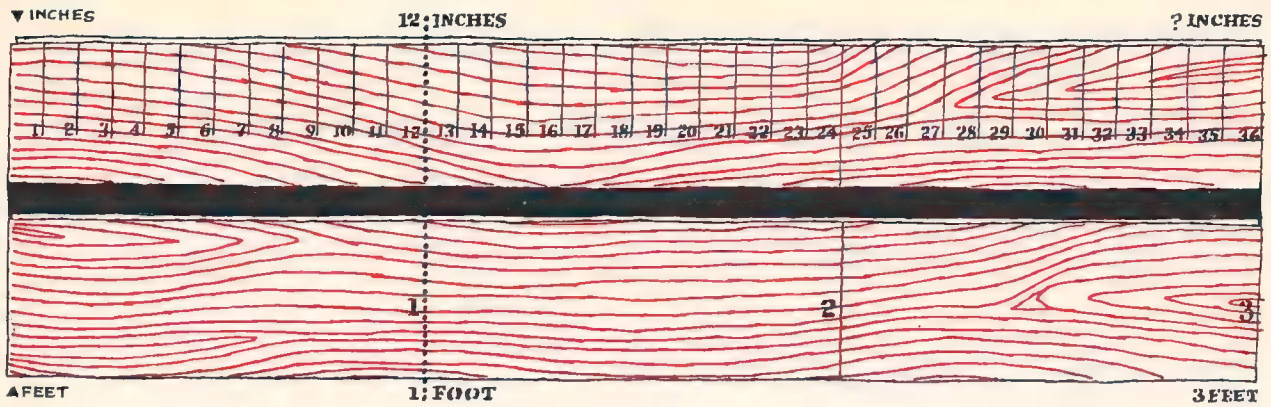
22. Mary had 38¢. She has 24¢ left. How much did she spend? _____ _____

23. Fred has 63 marbles. How many sets of seven can he make? _____ _____

24. Sue has 72¢ worth of stamps. How many 8¢ stamps is that? _____ _____

Name _____

Functions and Sequences



Write the function rule, then name the quantities.

	Rate	Rule	Quantities
1.	50¢ per hour	_____	_____ ¢ for 5 hours
			_____ ¢ for 7 hours
2.	12 inches per foot	_____	_____ inches in 3 feet
			_____ inches in 8 feet
3.	60 minutes per hour	_____	_____ minutes in 4 hours
			_____ minutes in 6 hours
4.	24 students per room	_____	_____ students in 2 rooms
			_____ students in 9 rooms
5.	16 ounces per pound	_____	_____ ounces in 24 pounds
			_____ ounces in 36 pounds

Continue the sequence for 5 more terms. Give the rule for naming the term.

6. {5, 10, 15, _____, _____, _____, _____, _____} _____

7. {4, 9, 14, _____, _____, _____, _____, _____} _____

8. {7, 12, 17, _____, _____, _____, _____, _____} _____

9. {1, 4, 9, _____, _____, _____, _____, _____} _____

10. {0, 3, 8, _____, _____, _____, _____, _____} _____

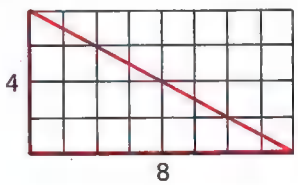
Formulas

Match the number phrase with the thing it names.

1. _____ $= l \times w \times h$	**a.** A	**5.** _____ $= D \div t$	**e.** w
2. _____ $= r \times t$	**b.** V	**6.** _____ $= A \div l$	**f.** r
3. _____ $= l \times w$	**c.** P	**7.** _____ $= A \div w$	**g.** t
4. _____ $= 2 \times (l + w)$	**d.** D	**8.** _____ $= D \div r$	**h.** l

To find the area of a triangle we multiply $\frac{1}{2} \times$ (base $\times$ height).

$$A = \frac{1}{2} \times (b \times h)$$
$$= \frac{1}{2} \times (8 \times 4) = 16$$



9. Can you explain why we multiply by $\frac{1}{2}$?

_____

_____

Write a formula for

10. finding the area of a square if each side is s. _____

11. finding the perimeter of a square if each side is s. _____

12. finding the volume of a cube if each side is s. _____

Name the volume, length, width, or height.

13. $l = 3$	**14.** $l = 3$	**15.** $l =$ _____	**16.** $l = 3$
$w = 8$	$w = 4$	$w = 4$	$w =$ _____
$h = 4$	$h =$ _____	$h = 9$	$h = 8$
$V =$ _____ cu. in.	$V = 72$ cu. in.	$V = 108$ cu. in.	$V = 240$ cu. in.

Name _____

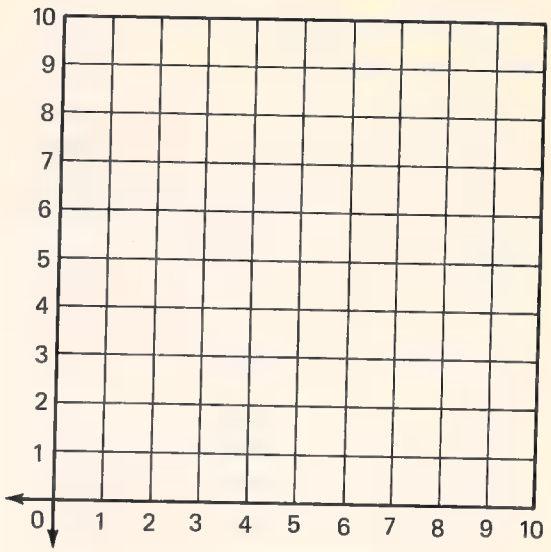
Graphing Function Equations

Work on the number plane.

1. Locate and label the following points on the number plane. The function equation is $m - 2 = f(m)$

A (3, 1) B (4, 2) C (5, 3)
D (7, 5) E (8, 6)

Connect points A, B, C, D, and E.
Write two more ordered pairs for this function rule. _____ _____



2. Locate and label the following points.

A (3, 1) F (6, 2) X (9, 3)

Connect points A, F, and X.

Write an equation for the function. _____

3. Are the graphs for the two equations parallel? _____

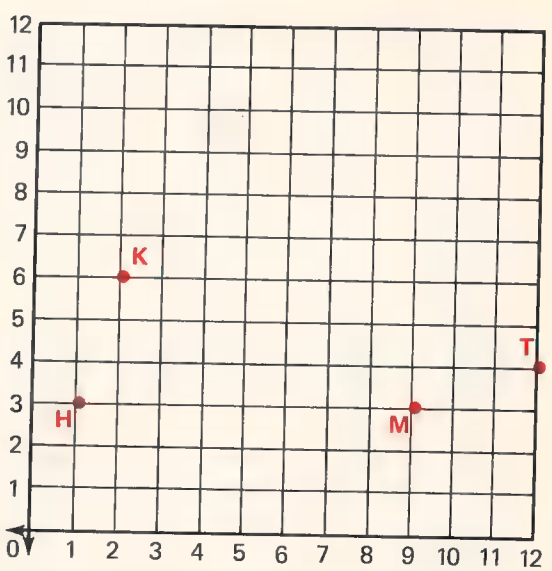
4. Name the point of intersection. _____

Use the number plane at the right.

5. Name the ordered pair for each point.

H = _____ M = _____

K = _____ T = _____



6. Connect points H and K. Write an equation for the set of ordered pairs on the line.

_____

7. Connect points M and T. Write an equation for the set of ordered pairs on the line.

_____

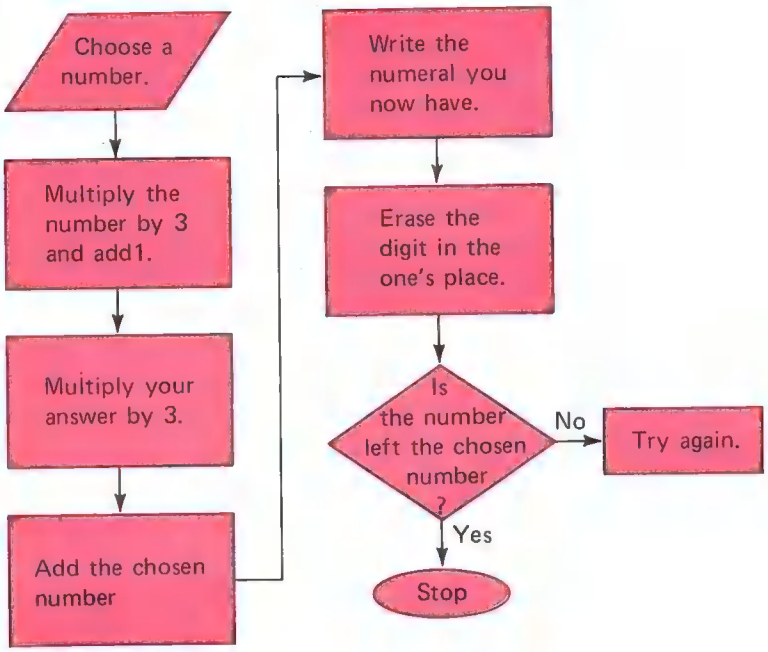
8. Connect points H, K, and M. What figure do you have?

_____

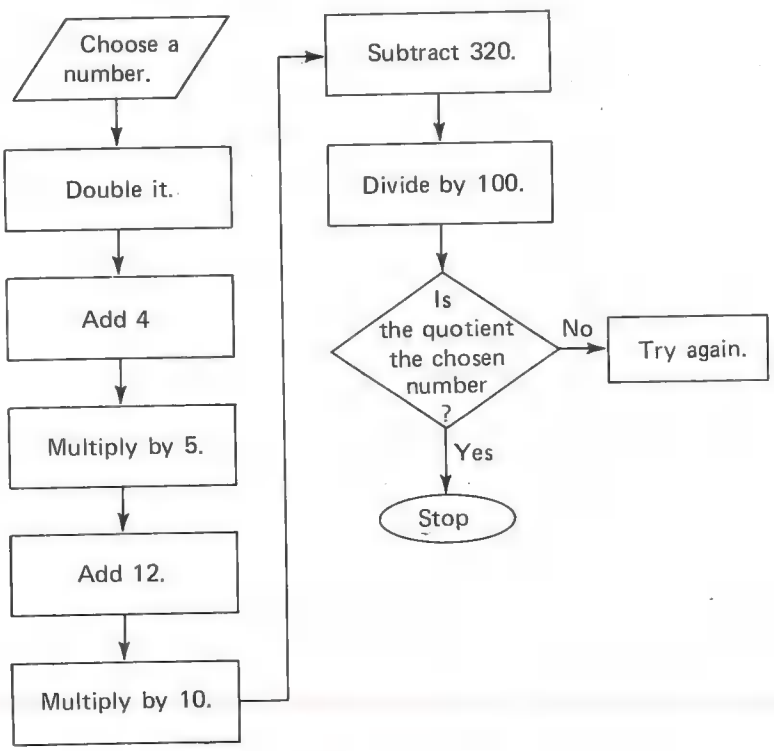
Following Directions

Just for Fun

1. Try this with a friend.



2. Here is another method.

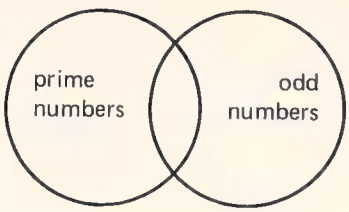


Do you know any "tricks" like this? Share them with your group.

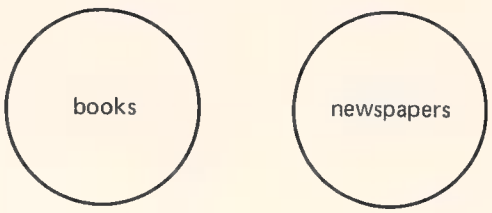
Name _____

Some — No

Study the set diagrams. Write No or Some to complete the sentences.



1. _____ prime numbers are odd.
2. _____ odd numbers are primes.

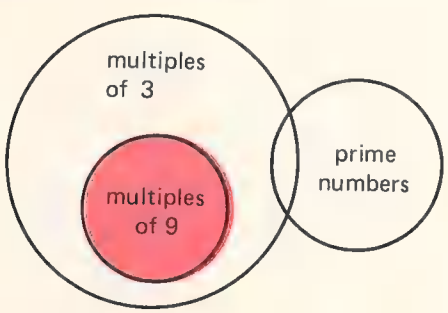


3. _____ books are newspapers.
4. _____ newspapers are books.

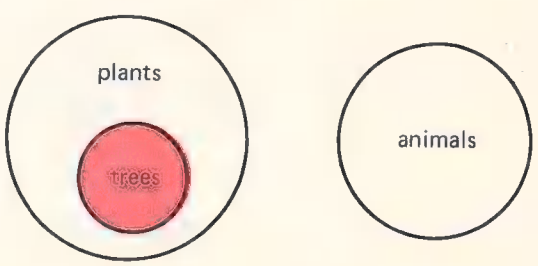
Draw a diagram to show.

5. No multiples of even numbers are odd numbers.
7. Some multiples of 2 are multiples of 3.
6. Some cars have three wheels.
8. No airplanes fly under water.

Write All, Some or No.



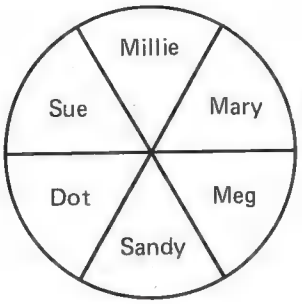
9. _____ multiples of 9 are multiples of 3.
10. _____ multiples of 3 are multiples of 9.
11. _____ multiples of 9 are prime numbers.

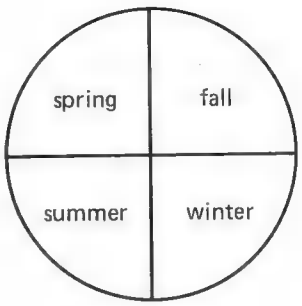


12. _____ trees are plants.
13. _____ plants are trees.
14. _____ plants or trees are animals.

If–then—If not–then

Use the diagrams to help you complete the sentence.



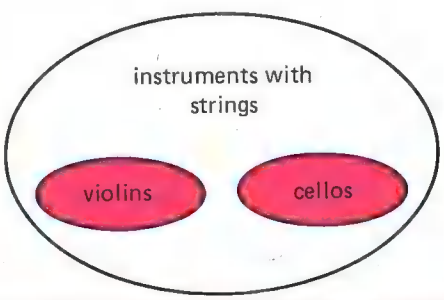


1. If it begins with S, then it is _____ or _____.
2. If it begins with S and has a *d* in it, then it is _____.
3. If it does not begin with S or M, then it is _____.
4. If it begins with M, then it is _____, _____, or _____.
5. If it begins with S, then it is _____ or _____.
6. If it is not summer or winter, then it must be _____ or _____.
7. If it begins with S and ends in *er*, then it is _____.
8. If it is not spring or fall, then it is _____ or _____.

Complete the sentences.

9. If your sister is between 8 and 11 years old and she is not 9, then she is _____ years old.
10. If you name an even number between 12 and 20 and it is not 16 or 18, then it is _____.

Use the set diagram. Write *T* or *F* to show whether the statement is true or false.



11. If it is a cello, then it has strings. _____
12. If it is a violin, then it is not a cello. _____
13. If it has strings, it may be something other than a violin or cello. _____

chapter 9

Name _____

multiplication, division with fractional numbers

Multiplying a Whole Number and a Fraction

Study the two methods.

$$6 \times \frac{2}{3} = (6 \times 2) \times \frac{1}{3}$$
$$= 12 \times \frac{1}{3}$$
$$= \frac{12}{3} = 4$$

A

$$\frac{2}{3} \times 6 = 2 \times \left(\frac{1}{3} \times 6\right)$$
$$= 2 \times 2$$
$$= 4$$

B

Use method A to name the product.

1. $8 \times \frac{3}{4} =$

3. $7 \times \frac{5}{8} =$

5. $4 \times \frac{3}{5} =$

7. $7 \times \frac{3}{7} =$

2. $10 \times \frac{2}{5} =$

4. $8 \times \frac{2}{9} =$

6. $5 \times \frac{3}{8} =$

8. $14 \times \frac{2}{7} =$

Use method B to name the product.

9. $\frac{2}{3} \times 9 =$

11. $\frac{3}{4} \times 12 =$

13. $\frac{4}{5} \times 25 =$

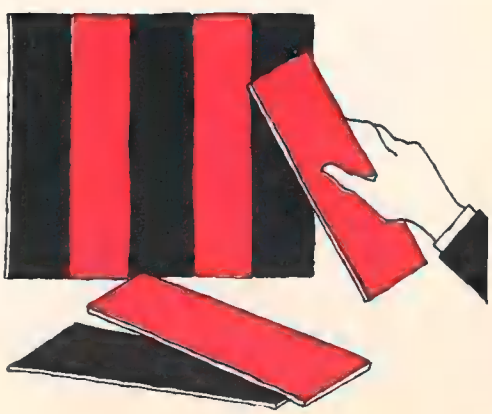
15. $\frac{5}{6} \times 18 =$

10. $\frac{4}{7} \times 28 =$

12. $\frac{3}{8} \times 24 =$

14. $\frac{6}{7} \times 42 =$

16. $\frac{3}{8} \times 32 =$



Find the total

17. width of eight $\frac{3''}{4}$ boards. _____

18. weight of eight $\frac{7}{8}$ oz. coins. _____

19. length of twelve $\frac{5''}{6}$ tubes. _____

Multiplying Two Fractions — 1 as a Factor

Name the product.

1. $\frac{2}{3} \times \frac{3}{4} =$ _____

2. $\frac{3}{4} \times \frac{5}{8} =$ _____

3. $\frac{3}{4} \times \frac{4}{5} =$ _____

4. $\frac{5}{6} \times \frac{2}{3} =$ _____

5. $\frac{1}{2} \times \frac{6}{11} =$ _____

6. $\frac{3}{4} \times \frac{2}{3} =$ _____

Give the prime factorization of each numerator and denominator.

7. $\frac{6}{12} =$ _____

8. $\frac{6}{15} =$ _____

9. $\frac{14}{21} =$ _____

10. $\frac{3 \times 6}{6 \times 7} =$ _____

11. $\frac{4 \times 9}{5 \times 15} =$ _____

12. $\frac{4 \times 7}{7 \times 22} =$ _____

13. $\frac{4 \times 9}{15 \times 16} =$ _____

14. $\frac{6}{7} \times \frac{14}{26} =$ _____

15. $\frac{5}{9} \times \frac{21}{25} =$ _____

16. $\frac{7}{15} \times \frac{9}{21} =$ _____

Complete the sentence.

17. Multiplying or dividing by _____ does not change a number.

18. When a common factor appears in the numerator and denominator it can be removed because it is a name for _____.

Write the products in Exercises 9 – 16 in simplest form.

19. _____

20. _____

21. _____

22. _____

23. _____

24. _____

25. _____

26. _____

Name _____

Multiplying Mixed Numerals

Rename as a fraction.

1. $1\frac{3}{4}$ = _____
2. $4\frac{2}{5}$ = _____
3. $3\frac{4}{7}$ = _____
4. $3\frac{2}{7}$ = _____
5. $4\frac{5}{6}$ = _____
6. $4\frac{3}{4}$ = _____
7. $7\frac{3}{8}$ = _____
8. $2\frac{5}{7}$ = _____

To multiply $2\frac{2}{3} \times 3\frac{1}{2}$ we first rename the mixed numerals as fractions. $\frac{8}{3} \times \frac{7}{2}$

Then we multiply. $\frac{8 \times 7}{3 \times 2} = \frac{2 \times 2 \times \overset{1}{\cancel{2}} \times 7}{3 \times \underset{1}{\cancel{2}}} = \frac{28}{3} = 9\frac{1}{3}$

Use the method above to name the product.

9. $3\frac{1}{3} \times 2\frac{1}{2}$ = _____
10. $4\frac{1}{3} \times 2\frac{1}{4}$ = _____
11. $5\frac{1}{3} \times 3\frac{3}{4}$ = _____
12. $4\frac{1}{5} \times 3\frac{2}{3}$ = _____
13. $3\frac{1}{4} \times 2\frac{2}{7}$ = _____
14. $5\frac{3}{5} \times 2\frac{1}{7}$ = _____
15. $2\frac{1}{4} \times 4\frac{1}{6}$ = _____
16. $4\frac{2}{3} \times 5\frac{2}{5}$ = _____
17. $3\frac{3}{7} \times 2\frac{7}{8}$ = _____

Rename as a mixed numeral.

18. $\frac{11}{3}$ = _____
19. $\frac{14}{3}$ = _____
20. $\frac{12}{8}$ = _____
21. $\frac{11}{6}$ = _____
22. $\frac{6}{3}$ = _____
23. $\frac{18}{5}$ = _____
24. $\frac{21}{6}$ = _____
25. $\frac{23}{7}$ = _____

Multiplying with Decimals

Name the products.

1. $\frac{2}{10} \times \frac{3}{10}$ = _____
2. $.2 \times .3$ = _____
3. $\frac{7}{10} \times \frac{8}{10}$ = _____
4. $.7 \times .8$ = _____
5. $\frac{3}{10} \times \frac{4}{10}$ = _____
6. $.3 \times .4$ = _____
7. $\frac{7}{10} \times \frac{24}{100}$ = _____
8. $.7 \times .24$ = _____
9. $\frac{3}{10} \times \frac{4}{100}$ = _____
10. $.3 \times .04$ = _____
11. $\frac{6}{10} \times \frac{3}{100}$ = _____
12. $.6 \times .03$ = _____

13. $\begin{array}{r} .6 \\ \times .4 \\ \hline \end{array}$
14. $\begin{array}{r} .68 \\ \times .3 \\ \hline \end{array}$
15. $\begin{array}{r} .74 \\ \times .4 \\ \hline \end{array}$
16. $\begin{array}{r} 5.23 \\ \times .3 \\ \hline \end{array}$
17. $\begin{array}{r} 8.76 \\ \times 5 \\ \hline \end{array}$
18. $\begin{array}{r} 9.34 \\ \times 6 \\ \hline \end{array}$
19. $\begin{array}{r} 7.85 \\ \times 23 \\ \hline \end{array}$
20. $\begin{array}{r} 6.97 \\ \times 34 \\ \hline \end{array}$
21. $\begin{array}{r} 8.31 \\ \times 3.5 \\ \hline \end{array}$
22. $\begin{array}{r} 6.72 \\ \times 3.1 \\ \hline \end{array}$
23. $\begin{array}{r} 4.85 \\ \times 9.3 \\ \hline \end{array}$
24. $\begin{array}{r} 26.75 \\ \times 3.2 \\ \hline \end{array}$

Estimate the product.

25. 2.3 times 24 _____
26. 1.3 times 6.28 _____
27. 7.67 times 5 _____
28. 6.78 times .9 _____
29. 3.35 times 1.65 _____
30. 2.3 times 5 _____
31. 1.23 times 8 _____
32. 2.73 times 12 _____
33. 6.24×2.24 _____
34. 5.72×3.43 _____

Name _____

Dividing a Fraction by a Whole Number

Complete the division.

1. $\frac{\square}{2)\ 4}$ (fifths) / (fifths)

3. $\frac{\square}{3)\ 6}$ (sevenths) / (sevenths)

5. $\frac{\square}{3)\ 9}$ (elevenths) / (elevenths)

7. $\frac{\square}{5)10}$ (elevenths) / (elevenths)

2. $\frac{4}{5} \div 2 =$ _____

4. $\frac{6}{7} \div 3 =$ _____

6. $\frac{9}{11} \div 3 =$ _____

8. $\frac{10}{11} \div 5 =$ _____

9. Remember: Dividing by 3 is the same as multiplying by _____.

10. Remember: Dividing by 8 is the same as multiplying by _____.

11. Remember: Dividing by 4 is the same as multiplying by _____.

12. Remember: Dividing by 5 is the same as multiplying by _____.

13. Remember: Dividing by 2 is the same as multiplying by _____.

To divide $\frac{3}{4}$ by 2 we can multiply $\frac{3}{4}$ by $\frac{1}{2}$; $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$

Use the method above to name the quotient.

14. $\frac{3}{4} \div 4 =$ _____

17. $\frac{4}{5} \div 3 =$ _____

20. $\frac{5}{6} \div 4 =$ _____

23. $\frac{7}{8} \div 3 =$ _____

15. $\frac{5}{6} \div 7 =$ _____

18. $\frac{7}{8} \div 5 =$ _____

21. $\frac{9}{10} \div 7 =$ _____

24. $\frac{6}{7} \div 4 =$ _____

16. $\frac{4}{5} \div 5 =$ _____

19. $\frac{7}{8} \div 9 =$ _____

22. $\frac{6}{7} \div 8 =$ _____

25. $\frac{7}{8} \div 4 =$ _____

Division of Decimals — Reciprocals

Name the quotient.

1. $5\overline{)6.85}$
2. $8\overline{)3.424}$
3. $23\overline{)75.9}$
4. $9\overline{)3.681}$
5. $4\overline{)6.948}$
6. $43\overline{)96.32}$
7. $4\overline{)2.96}$
8. $3\overline{)69.432}$
9. $22\overline{)55.88}$
10. $6\overline{)73.26}$
11. $5\overline{)8.475}$
12. $63\overline{)49.77}$

Remember:

Dividing by 4 is the same as multiplying by $\frac{1}{4}$

4 and $\frac{1}{4}$ are reciprocals. $4 \times \frac{1}{4} = 1$

Dividing by $\frac{2}{3}$ is the same as multiplying by $\frac{3}{2}$

$\frac{2}{3}$ and $\frac{3}{2}$ are reciprocals. $\frac{2}{3} \times \frac{3}{2} = 1$

Use a reciprocal to help you name the quotient.

13. $7 \div \frac{2}{3} =$ _____
14. $5 \div \frac{2}{5} =$ _____
15. $\frac{7}{9} \div \frac{3}{8} =$ _____
16. $\frac{5}{7} \div \frac{2}{3} =$ _____
17. $8 \div \frac{3}{4} =$ _____
18. $7 \div \frac{2}{3} =$ _____
19. $\frac{3}{4} \div \frac{5}{7} =$ _____
20. $\frac{5}{9} \div \frac{3}{4} =$ _____
21. $9 \div \frac{5}{6} =$ _____
22. $8 \div \frac{5}{7} =$ _____
23. $\frac{5}{6} \div \frac{3}{4} =$ _____
24. $\frac{7}{8} \div \frac{4}{5} =$ _____
25. $7 \div \frac{3}{5} =$ _____
26. $7 \div \frac{3}{8} =$ _____
27. $\frac{6}{7} \div \frac{4}{5} =$ _____
28. $\frac{6}{7} \div \frac{9}{10} =$ _____

Name _____

Division by Decimals

To estimate the quotient $.9\overline{)6.39}$

Think: .9 is about 1. There are about 6 ones in 6.39

Then divide $.9\overline{)\begin{array}{r}7.1\\6.39\end{array}}$

Six is nearer to 7.1 than to 71 or .71 so we place the decimal point after the 7.

In $.23\overline{)\begin{array}{r}30.\\6.90\end{array}}$

Think: .23 is about $\frac{1}{4}$, $6 \div \frac{1}{4}$ is about 24.

We place the decimal point after the 0.

Divide, then place the decimal point by estimation.

1. $.9\overline{)3.60}$ **2.** $.23\overline{)73.6}$ **3.** $.33\overline{)75.9}$ **4.** $2.9\overline{)92.8}$

5. To multiply a decimal by 10 we can move the decimal point _____ place to the right.

6. To multiply a decimal by 100 we can move the decimal point _____ places to the right.

7. To multiply a decimal by 1000 we can move the decimal point _____ places to the right.

To divide $.23\overline{)73.60}$ we can multiply both parts by 100 to make the divisor a whole number. Then divide $23\overline{)7360}$

Use the method above to name the quotient.

8. $.12\overline{)1.56}$ **11.** $.7\overline{)2.94}$ **14.** $.36\overline{)7.56}$ **17.** $2.6\overline{)83.72}$

9. $.45\overline{)97.65}$ **12.** $4.8\overline{)56.64}$ **15.** $.37\overline{)31.82}$ **18.** $6.5\overline{)76.05}$

10. $.26\overline{)12.22}$ **13.** $3.8\overline{)212.8}$ **16.** $9.3\overline{)697.5}$ **19.** $.84\overline{)57.96}$

Probability

Use the set below to help you answer each question in fraction form.

1. What is the probability of selecting a gray region? _____

2. What is the probability of selecting a red region? _____

3. What is the probability of selecting neither a red nor gray region? _____

4. What is the probability of selecting either a red or gray region? _____

5. What is the probability of selecting a square region? _____

Use the sets below to help you answer each question in fraction form.

6. What is the probability of selecting a gray region from each set? _____

7. What is the probability of selecting a white region from each set? _____

8. What is the probability of selecting a red region from each set? _____

9. What is the probability of selecting a white circular region and a gray square region? _____

10. What is the probability of not selecting a white region from either group? _____

Solve the problem.

11. Bill has a bag of marbles. If there are 15 red marbles, 20 black ones, and 10 white ones, what is the probability of picking out a

red marble? _____ a white marble? _____

a black marble? _____ a blue marble? _____.

chapter 10

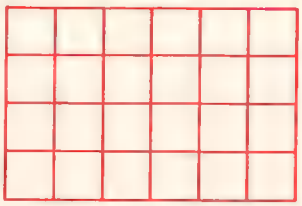
Name _____

geometry

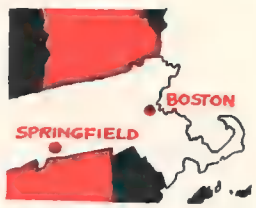
Review — Circumference

Name a unit you can use to measure each.

1. _____

2.  _____

3.  _____

4. 

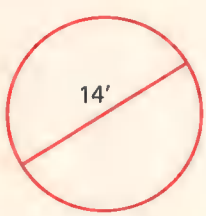
_____

5. The *circumference* of a *circle* is about _____ times the length of the diameter.

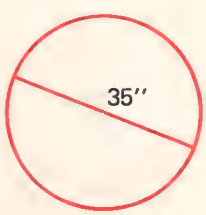
6. The value of π is about _____.

7. To find the circumference of a circle we multiply _____.

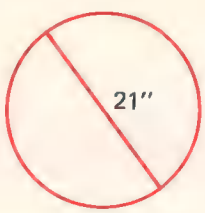
Find the circumference of each circle.

8. 

_____

9. 

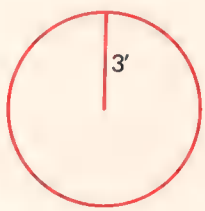
_____

10. 

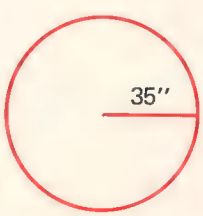
_____

11. 

_____

12. 

_____

13. 

_____

Just for Fun

14. In the formula $C = \pi \times d$ we could replace d with _____.

15. Another way to write the formula $C = \pi \times d$ is $C = \pi \times$ _____ $\times$ _____.

Angles — Parallel

1. Draw two lines that are parallel.

2. Label the $\overline{AB}$ on one and $\overline{CD}$ on the other.

3. Draw a line that is *perpendicular* to $\overline{AB}$ and intersects both lines.

4. Label $\overline{FG}$ on the perpendicular line.

5. What is the measure of the angles where $\overline{FG}$ intersects $\overline{AB}$? _____ where $\overline{FG}$ intersects $\overline{CD}$? _____

6. If two lines intersect and the angles are 90°, the lines are _____.

7. Line *CD* is perpendicular to line _____.

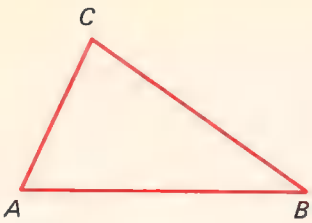
Complete the table.

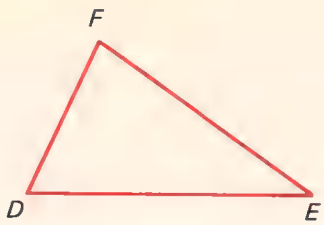
	Figure	Angle 1	Angle 2	Angle 3	Angle 4
8.	triangle	45°	45°		None
9.	triangle	60°	80°		None
10.	quadrilateral	80°	60°	120°	
11.	quadrilateral	70°	80°	100°	
12.	rectangle				

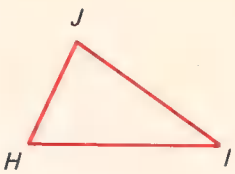
13–17. Draw the figures described in Exercises 8–12.

Name _____

Congruent Angles







Name the measure of the angles.

1. $\angle ABC$ _____ degrees

2. $\angle BCA$ _____ degrees

3. $\angle CAB$ _____ degrees

4. $\angle DEF$ _____ degrees

5. $\angle DFE$ _____ degrees

6. $\angle EDF$ _____ degrees

7. $\angle HIJ$ _____ degrees

8. $\angle IJH$ _____ degrees

9. $\angle JHI$ _____ degrees

Complete the sentences. Study the Exercises 1–9 if you need to.
Name the congruent angles.

10. _____, _____ and _____

11. _____, _____ and _____

12. _____, _____ and _____

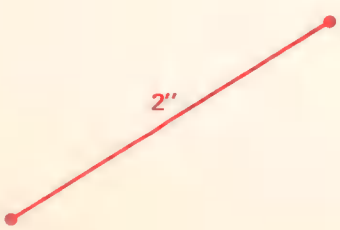
13. If the angles are the same are the triangles *congruent?* _____

14. If two triangles are congruent they must have matching angles of the same measurement and _____ measurement.

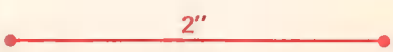
***15.** If the matching sides are <u>not</u> the same length but the matching angles are the same we say the triangles are _____.

Use your protractor to draw two congruent triangles. Use the line segment as one side.

16.



17.

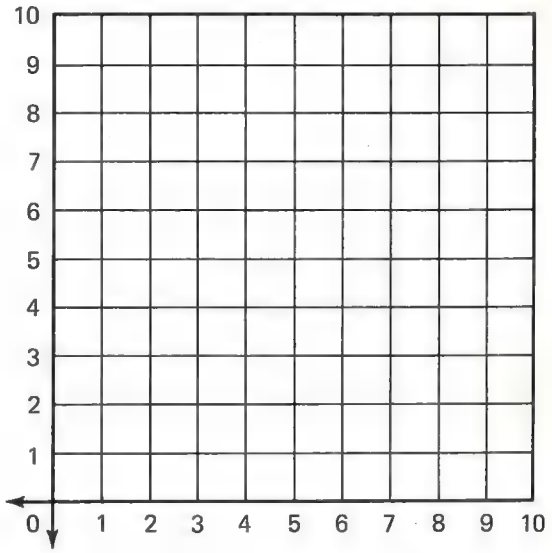


Number Planes

On the number plane draw a polygon using points

1. A (4, 7), B (7, 4), and C (4, 0) as vertexes.

2. D (1, 8), E (4, 5) and F (1, 1) as vertexes.



Name the congruent segments.

3. $\overline{AB}$ is congruent to _____.

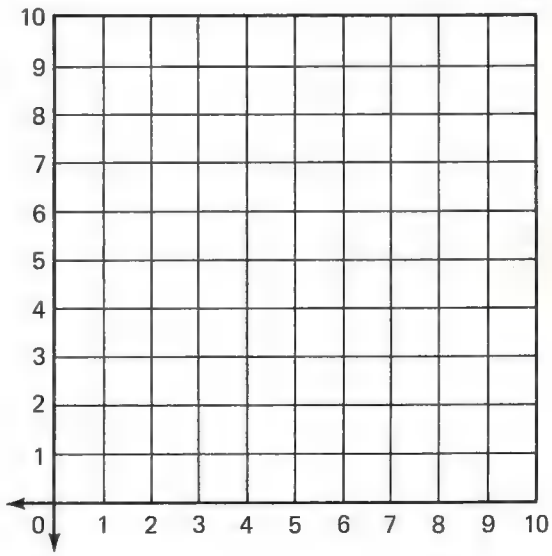
4. $\overline{BC}$ is congruent to _____.

5. $\overline{AC}$ is congruent to _____.

6. Write the rule for moving shape ABC to shape DEF.

Locate and label the point as shown.

7. U (2, 2) T (5, 5) N (3, 3)
   I (6, 6) F (1, 1) C (4, 4)
   O (7, 7) N (8, 8)



*8. Can you write the function equation for the graph? _____

Name _____

Ratio — Similar Polygons

Name the ratios.

1. 1 quart to 1 gallon _____
2. 1 foot to 1 yard _____
3. 1 minute to 1 hour _____
4. 1 month to 1 year _____
5. 1 inch to 1 foot _____
6. 1 inch to 1 yard _____
7. 1 hour to 1 day _____
8. 6 inches to 1 yard _____
9. 1 cup to 1 quart _____
10. 1 pint to 1 gallon _____
11. 2 days to 1 week _____
12. 1 centimeter to 1 meter _____

Write equal ratios by completing the equation.

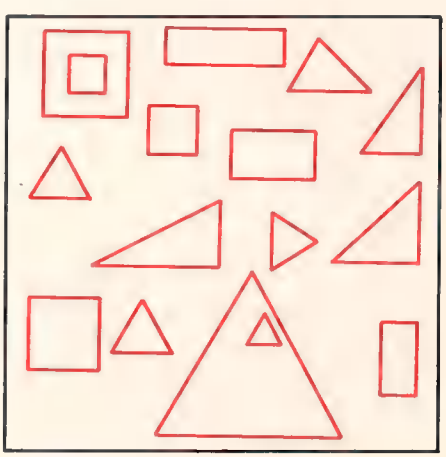
13. $\frac{5}{6} = \frac{\square}{18}$
14. $\frac{7}{8} = \frac{\square}{16}$
15. $\frac{4}{5} = \frac{16}{\square}$
16. $\frac{2}{3} = \frac{8}{\square}$

Name the measures for two other similar triangles.

	Triangle	Similar triangle 1	Similar triangle 2
17.	Side *A* - 3	Side *A* _____	Side *A* _____
	Side *B* - 5	Side *B* _____	Side *B* _____
	Side *C* - 5	Side *C* _____	Side *C* _____

Write *T* or *F* to tell whether the statement is true or false.

18. All rectangles are similar. _____
19. All equilateral triangles are similar. _____
20. All squares are similar. _____
21. All triangles are similar. _____
22. All right triangles are similar. _____



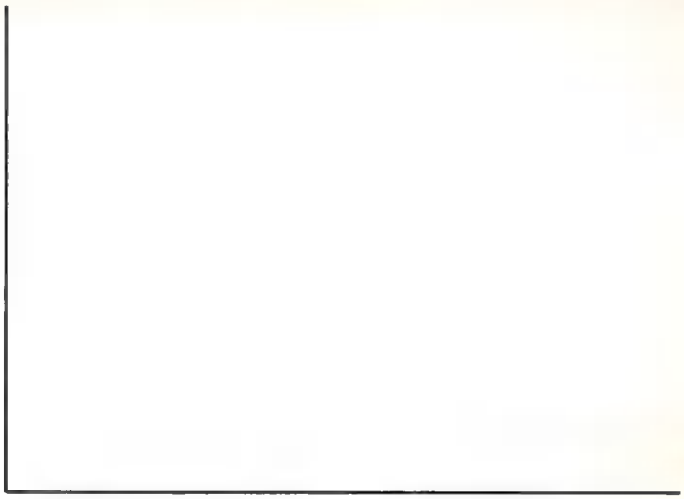
Complete the sentences.

23. If $\frac{1}{8}''$ represents 3 feet, $\frac{5}{8}''$ represents _____ feet.
24. If $\frac{1}{2}''$ represents 10 miles, 4″ represents _____ miles.
25. If $\frac{1}{6}''$ represents 100 feet, $\frac{5}{6}''$ represents _____ feet.

Bar Graphs

Make a bar graph to show the information.

	Day	Number of lunches
1.	January 4	145
	January 5	165
	January 6	155
	January 7	160
	January 8	150
	January 9	160



2. On what day were the most lunches served? ---------- fewest? ----------

Show one set of information with ■. Show the other set of information with ■.

3. Points scored on the first four games last year.

   Game **1** — 20

   Game **2** — 18

   Game **3** — 22

   Game **4** — 24

4. Points scored on the first four games this year.

   Game **1** — 18

   Game **2** — 24

   Game **3** — 26

   Game **4** — 30

5. Did the scores improve this year? ---------

6. Why do you think double bar graphs are used to show information?

Name _____

Area — Perimeter

Write *area* or *volume* in the space to tell which measure you use when you buy

1. carpeting. _____ **3.** floor tile. _____ **5.** gas. _____

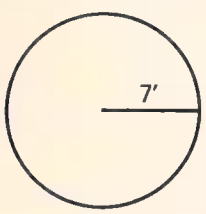
2. paint. _____ **4.** milk. _____ **6.** linoleum. _____

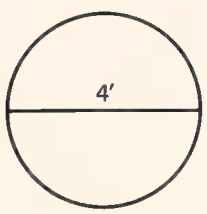
Write the formula for the

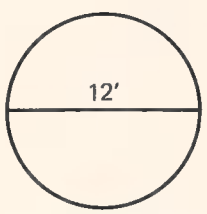
7. area of a square. _____ **9.** perimeter of a square. _____

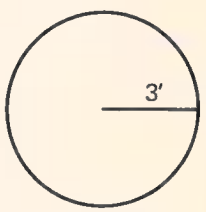
8. area of a triangle. _____ **10.** area of a rectangle. _____

Name the area of each circle.



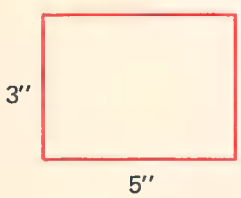


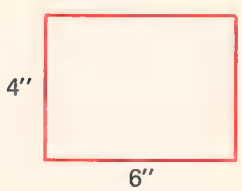


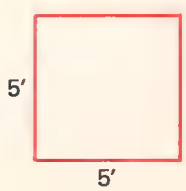


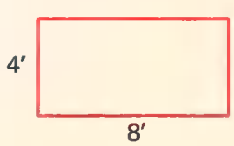
11. Area _____ **12.** Area _____ **13.** Area _____ **14.** Area _____

Name the area and perimeter of each figure.







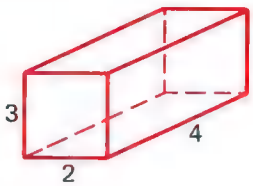


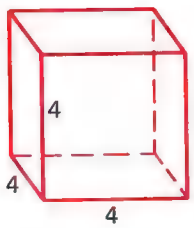
15. Area _____ **17.** Area _____ **19.** Area _____ **21.** Area _____

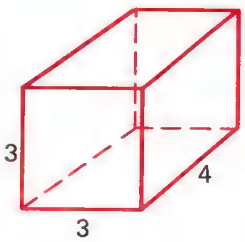
16. Perimeter _____ **18.** Perimeter _____ **20.** Perimeter _____ **22.** Perimeter _____

Area — Volume

Name the surface area and the volume for each closed surface.

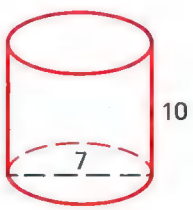


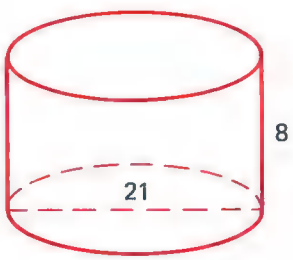


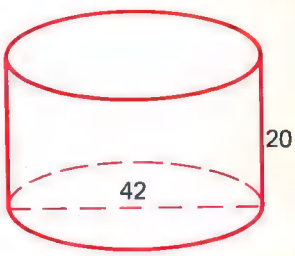


Surface area	**1.** _____	**3.** _____	**5.** _____
Volume	**2.** _____	**4.** _____	**6.** _____

Name the area of the base and the volume for each cylinder.







Area of base	**7.** _____	**9.** _____	**11.** _____
Volume	**8.** _____	**10.** _____	**12.** _____

chapter 11

Name _____

different ways with numbers, integers

Kinds of Numbers

Name the set of numbers that

1. are multiples of two. {_____}

2. end in five or zero. {_____}

3. never result in an even number when multiplied. {_____}

4. are multiples of 2 and 3. {_____}

5. have only two factors. {_____}

6. have 9 or a multiple of 9 as the sum of the digits. {_____}

7. can be represented in rows with the same number of objects in each row and column. {_____}

List the set described.

8. Primes less than 20. {_____}

9. Multiples of 7. {_____}

10. Factors of 48. {_____}

11. Even numbers less than 10. {_____}

12. Multiples of eleven less than 75. {_____}

Division of Decimals

Study the samples, then name the quotient.

$$\frac{9}{10} \div 3 = \frac{9}{10} \times \frac{1}{3} = \frac{3}{10} = .3 \qquad 3\overline{).9} \text{ (quotient } .3)$$

$$12\frac{8}{10} \div 4 = \frac{128}{10} \times \frac{1}{4} = \frac{32}{10} = 3.2 \qquad 4\overline{)12.8} \text{ (quotient } 3.2)$$

1. $2\frac{1}{10} \div 3 = \frac{\square}{10} \times$ _____ $= \frac{\square}{10} =$ _____

2. $3\overline{)2.1}$

3. $\frac{24}{100} \div 4 = \frac{24}{100} \times$ _____ $= \frac{\square}{100} =$ _____

4. $4\overline{).24}$

5. $3\overline{)42.9}$

6. $5\overline{)37.5}$

7. $23\overline{)105.8}$

8. $42\overline{)137.34}$

Name the average of the set of numbers.

9. {2.2, 4.6, 9.5, 8.4, 7.3, 6.4} Average _____

10. {.4, .9, .6, 7.4, 8.3, 2.8} Average _____

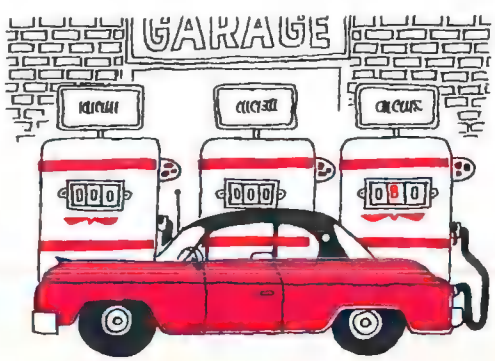
11. {28.2, 74.6, 39.9, 84.2, 74.6} Average _____

12. {3.7, 4.5, 9.6, 8.8, 43.9} Average _____

Name the amount.

13. Jim travels 145.6 miles on 8 gallons of gas. How many miles is that per gallon? _____

14. If he traveled 212.8 miles in 4 hours, how many miles is that per hour? _____



Name _____

Division with Decimals

Here are a few exercises your great-great-grandparents may have found in their mathematics textbook. Can you solve them?

1. How many barrels of apples, at $1.35 per barrel, can be bought for $21.93\frac{3}{4}$? _____

2. How many cords of wood, at $5.87\frac{1}{2}$ per cord, can be bought for $1921.12\frac{1}{2}$? _____

3. How many yards of cloth, at $5.75 per yard, can be bought for $199.525? _____

4. Divide 11.907 by .245

5. Divide .4022676 by .5321

Why do you think your textbooks today do not have exercises with as many decimal places as there are in Exercise 5?

_____

_____

Percent

Write the ratio as a percent.

1. 3 out of 5

---

2. 7 out of 8

---

3. 25 out of 40

---

4. 16 out of 64

---

5. $\frac{3}{10}$

---

6. $\frac{7}{25}$

---

7. $\frac{14}{50}$

---

8. $\frac{9}{20}$

Change the percent to a decimal, then name the product.

9. 40% × 56

---

10. 38% × 87

---

11. 43% × 72

---

12. 88% × 34

Change the percent to a fraction, then name the product.

13. 80% × 62

---

14. 15% × 85

---

15. 45% × 400

---

16. 3% × 150

Name _____

Introducing Integers

Write *yes* or *no* to tell whether you can solve each equation if the replacement set is {whole numbers}.

1. $n - 3 = 4$ _____

2. $3 - n = 4$ _____

3. $2 \times x = 3$ _____

4. $3 \times y = 9$ _____

5. $8 + m = 11$ _____

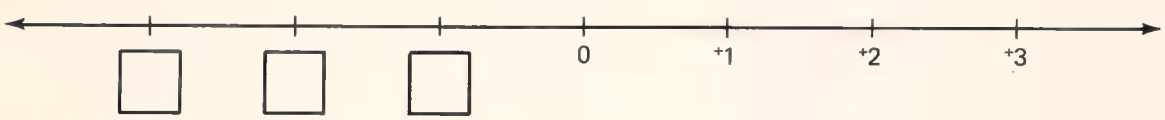
6. $8 + m = 6$ _____

Record the final temperature.

	Temperature	Rise	Fall	Final temperature
7.	13° above 0		14°	_____
8.	16° above 0		12°	_____
9.	13° below 0	10°		_____
10.	4° below 0	15°		_____
11.	16° above 0		23°	_____

Name the points on the number line.

12–14.



Answer the question.

15. Is zero positive or negative? _____

16. Except for zero is there a positive number to match each negative number? _____

17. Are the matching numbers the same distance from zero? _____

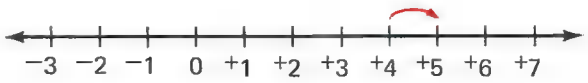
18. What is the point halfway between 0 and $^{-}1$? _____

19. What is the point halfway between $^{-}1$ and $^{-}2$? _____

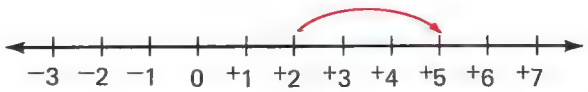
Adding Integers — Fraction Review

Name the sum.

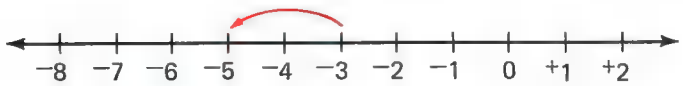
1. $^{+}4 + {}^{+}1 =$ _____



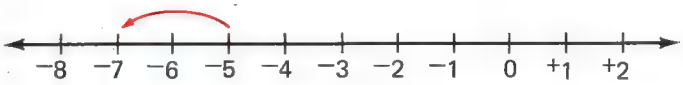
2. $^{+}2 + {}^{+}3 =$ _____



3. $^{-}3 + {}^{-}2 =$ _____



4. $^{-}5 + {}^{-}2 =$ _____



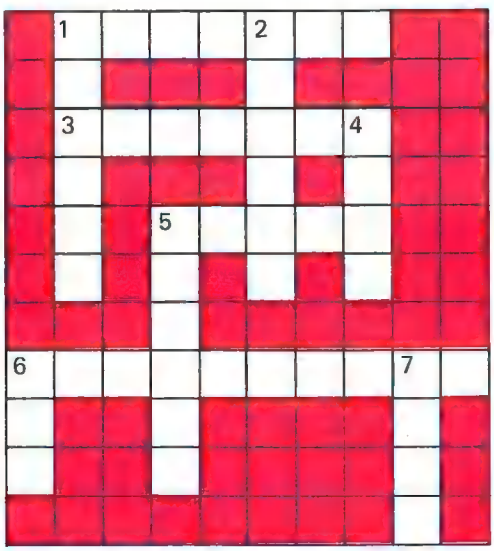
Complete each set of number pairs using the function rule.

5. add $^{+}3$ {($^{+}4$, _____), ($^{+}3$, _____), ($^{+}2$, _____), ($^{+}1$, _____), (0, _____), ($^{-}1$, _____)}

6. add $^{-}4$ {($^{+}2$, _____), ($^{+}1$, _____), (0, _____), ($^{-}1$, _____), ($^{-}2$, _____), ($^{-}3$, _____)}

7. add $^{+}2$ {($^{+}1$, _____), (0, _____), ($^{-}1$, _____), ($^{-}2$, _____), ($^{-}3$, _____), ($^{-}4$, _____)}

Use the word name for each number.



ACROSS

1. Another name for 1 is four-_____.

3. The LCM of 3 and 5 is _____.

5. $\frac{1}{2}$ = _____-fourteenths.

6. One-half = eight-_____.

DOWN

1. $\frac{6}{10}$ = three _____.

2. The LCM of 6 and 4 is _____.

4. $\frac{3}{4}$ = _____-twelfths.

5. To add thirds and halves we rename the addends as _____.

6. The LCM of 2 and 3 is _____.

7. The simplest name for $\frac{5}{10}$ is one _____.

Name _____

Subtracting Integers

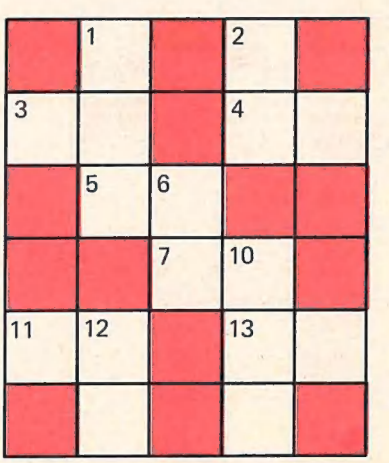
Name the difference.

1. $^{+}3 - {}^{-}5 =$ _____
2. $^{+}7 - {}^{-}3 =$ _____
3. $^{-}3 - {}^{-}6 =$ _____
4. $^{+}4 - {}^{+}3 =$ _____
5. $^{+}6 - {}^{-}5 =$ _____
6. $^{-}7 - {}^{-}2 =$ _____
7. $^{+}6 - {}^{-}3 =$ _____
8. $^{-}8 - {}^{-}2 =$ _____
9. $^{+}1 - {}^{-}3 =$ _____
10. $^{-}8 - {}^{+}8 =$ _____
11. $^{-}9 - {}^{-}4 =$ _____
12. $^{+}7 - {}^{-}9 =$ _____
13. $^{+}4 - {}^{+}6 =$ _____
14. $^{+}1 - {}^{+}8 =$ _____
15. $^{+}8 - {}^{+}7 =$ _____
16. $^{+}9 - {}^{+}13 =$ _____
17. $^{-}10 - {}^{+}4 =$ _____
18. $^{+}6 - {}^{-}13 =$ _____
19. Can you select any two numbers and subtract them using the set of integers? _____
20. The set of _____ is closed for subtraction.

Complete the puzzle using base eight numerals.

ACROSS

3. Months in a year _____eight
4. Weeks in a year _____eight
5. 33_{ten} = _____eight
7. Days in three weeks _____eight
11. Weeks in half a year _____eight
13. Days in six weeks _____eight



DOWN

1. Years in a century _____eight
2. Days in June _____eight
6. Years in a decade _____eight
10. Days in a year _____eight
12. Days in three weeks _____eight

Just for Fun

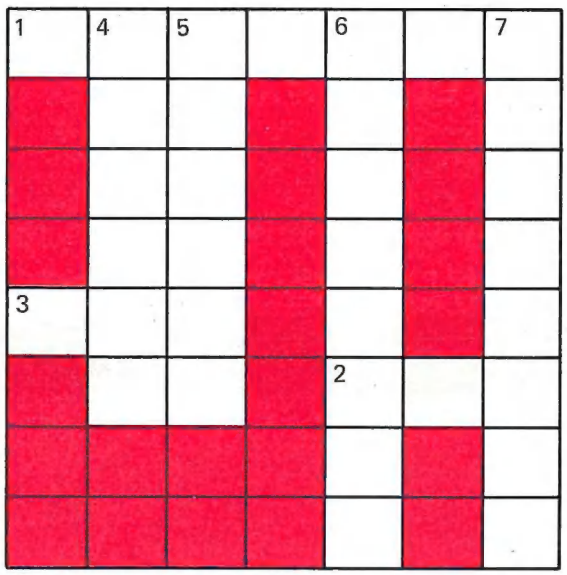
Solve the crossword puzzle.

ACROSS

1. May be positive or negative
2. The same as 2000 pounds
3. It means rate

DOWN

4. Shown by a numeral
5. An idea
6. Study of points
7. Comes from the word ratio



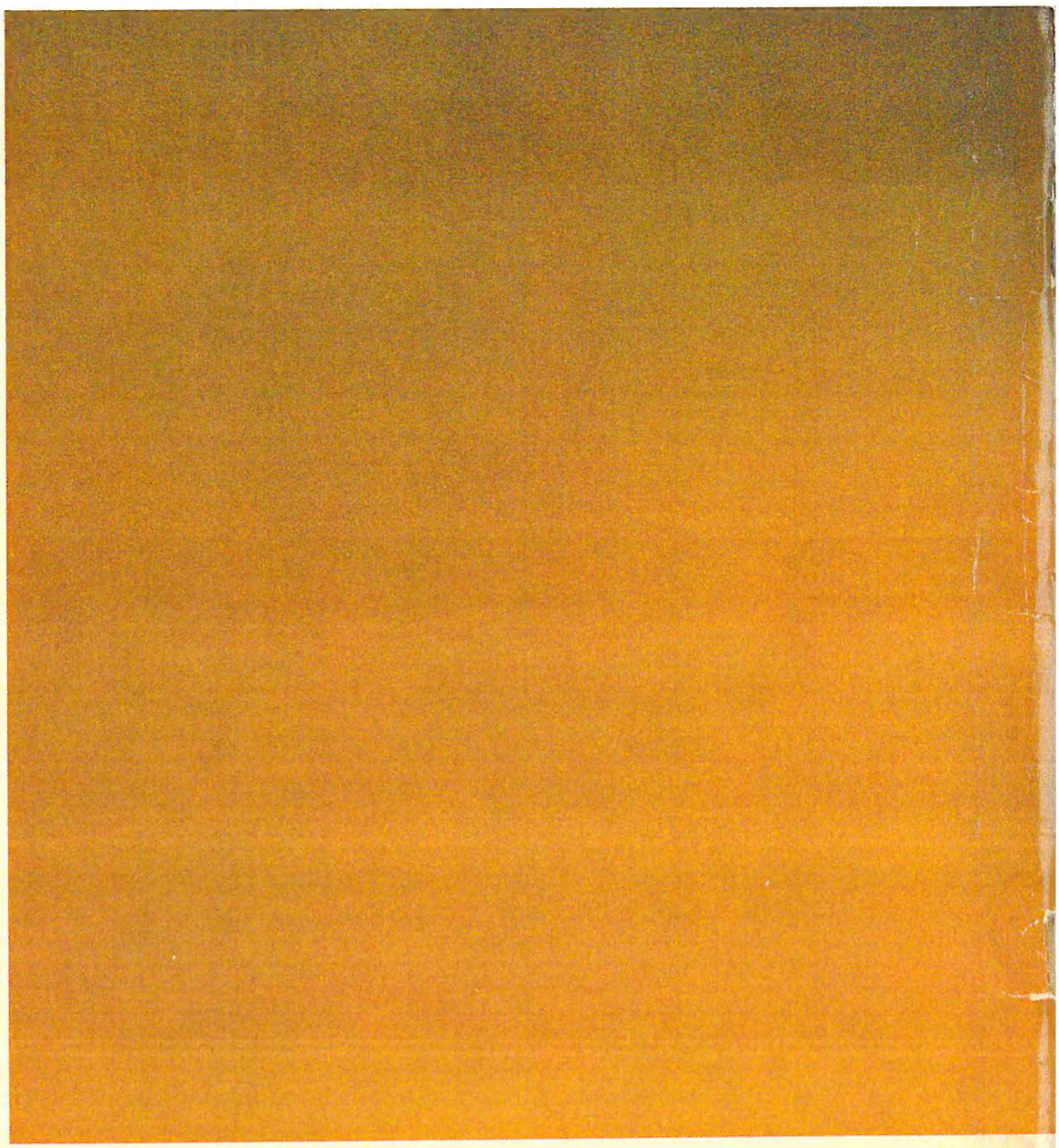
Jack decided to put Roman numerals in his report. Can you answer the questions using our numerals?

On June XIV there were XXXVII of us who took a IX o'clock bus to the city. We watched a parade in which CCCLXV people took part. VIII bands, XVI floats, and XXVI horses passed by. After eating a XCIX cent lunch, we went to the ball game. MDCL people saw the home team win.

8. On what day did Jack's friends go to the city? _____
9. How many went? _____
10. What time did the bus leave? _____
11. How many people were in the parade? _____
12. How many bands were there? _____
13. How many floats were there? _____
14. How many horses were in the parade? _____
15. How much did lunch cost? _____
16. How many people were at the ball game? _____

Student Text and Workbook Correlation Chart

Workbook Page	Text Pages	Workbook Page	Text Pages	Workbook Page	Text Pages
1	1–3	33	110–111	65	228–229
2	4–5	34	112–117	66	230–231
3	6–7	35	118–121	67	232–233
4	8–9	36	122–125	68	234–237
5	10–11	37	126–127	69	238–241
6	12–15	38	128–131	70	242–249
7	16–17	39	132–137	71	250–253
8	18–21	40	138–139	72	254–259
9	22–25	41	140–145	73	260–261
10	26–31	42	146–149	74	262–265
11	32–33	43	150–151	75	266–269
12	34–35	44	152–157	76	270–275
13	36–41	45	158–159	77	276–277
14	42–43	46	160–161	78	278–279
15	44–47	47	162–165	79	280–291
16	48–49	48	166–169	80	292–295
17	50–53	49	170–173	81	296–297
18	54–55	50	174–175	82	298–299
19	56–63	51	176–179	83	300–305
20	64–65	52	180–185	84	306–307
21	66–67	53	186–191	85	308–312
22	68–69	54	192–193	86	312–313
23	70–71	55	194–197	87	314–317
24	72–79	56	198–199	88	318–319
25	80–81	57	200–203	89	320–321
26	82–85	58	204–209	90	322–323
27	86–89	59	210–211	91	324–326
28	90–95	60	210–211	92	326–327
29	96–99	61	212–217	93	328–329
30	100–101	62	218–223	94	330–332
31	102–107	63	224–225		
32	108–111	64	226–227		



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